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TWENTY-NINTH YEAR

THE
ENGINEERING INDEX
ANNUAL
FOR
1912

COMPILED FROM THE ENGINEERING INDEX PUBLISHED MONTHLY
IN THE ENGINEERING MAGAZINE DURING 1912

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1913

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TO THE USER

WITH this volume of THE ENGINEERING INDEX—the eleventh since the work was first undertaken and the seventh since it assumed the "Annual" form—a continuous index to the engineering and technical literature of the past twenty-nine years is made available to the reader. And in this book, as in the Annual volumes previously issued, the "classified" system of arranging the items is followed in place of the "strict alphabetic" order of the earlier volumes. In other words, the articles indexed are first grouped under the great divisions of engineering practice to which they belong—Civil, Mechanical, Electrical, Mining, etc.—and under these again they are sub-grouped according to the recognized special divisions of each field. After these two steps have been taken in sorting the miscellaneous literature of the day into closely related sections, the final arrangement under each section becomes strictly alphabetical.

In THE ENGINEERING INDEX ANNUAL for 1912, herewith presented, the Classification of the Index on page 1 not only gives the main and sub-heads of the classified arrangement, but lists in addition every catchword, with its page reference, so that a full outline of the entire contents is given in a highly condensed form, and by running his eyes over this topical list the reader may save much of the time that might be spent searching the pages of the book itself.

Serial articles are indexed upon the appearance of the first installment only, thus giving the searcher the clue by which the succeeding articles can be found. This rule has been waived in some instances of articles in two or three installments, which are indexed entire.

The INDEX comprises about two hundred and fifty publications, representing seventeen nations and colonies and six languages. About three-fourths of these journals are printed in English, the others being in German, French, Spanish, Italian and Dutch. With every entry a brief descriptive note is given defining the scope and purport of the article, in many cases sufficient for the purpose of the investigator and saving him the labor of further search. In general, however, the INDEX is used as a guide to the otherwise overwhelming mass of information contained in the huge files of the engineering periodicals stacked on the shelves of reference libraries throughout the world.

The work as a whole represents the continuation of that originally started by the late Professor J. B. Johnson in the journal of the Association of Engineering Societies in 1884, and turned over by that association to THE ENGINEERING MAGAZINE at the close of 1895. The previous volumes, published in 1892, 1896, 1901, 1906, 1907, 1908, 1909, 1910, 1911 and 1912, respectively, covered with increasing fulness and thoroughness the field of periodical literature in engineering and closely related applied sciences. This latest volume brings the investigator down to the December, 1912, monthly part of THE ENGINEERING INDEX, covering the serial literature of engineering up to October, 1912, while the earlier parts enable searches such as occur in patent cases and the like to be prosecuted with a minimum of cost and delay.

REFERENCE LIST OF PERIODICALS

Alphabetical List of Periodicals Indexed in Order of their Abbreviations

Abbreviation	Title	Issues per Year	Place of Publication
All Indus	Alliance Industrielle	12	Brussels
Am Arch	American Architect	52	New York
Am Engr	American Engineer	12	New York
Am Gas Light Jour	American Gas Light Journal	52	New York
Am Inst of Archts	American Institute of Architects	1	New York
Am Jour Sci	American Journal of Science	12	New Haven
Am Mach	American Machinist	52	New York
Am Rev of Revs	American Review of Reviews	12	New York
Anales d l Soc Cien Argentina	Anales de la Sociedad Científica Argentina	12	Buenos Aires
Ann d Ponts et Chauss	Annales des Ponts et Chaussées	12	Paris
Ann della Soc d Ing e d Arch Ital	Annali della Società degli Ingegneri e degli Architetti Italiani	24	Rome
Ap Sci	Applied Science	12	Toronto
Arch Rec	Architectural Record	12	New York
Arch Rev	Architectural Review	12	Boston
Arch't	Architect	52	London
Arch't & Build's Mag	Architect's and Builder's Magazine	12	New York
Aust Min Stand	Australian Mining Standard	52	Melbourne
Autocar	Autocar	52	Coventry, Eng.
Auto Jour	Automotor Journal	52	London
Automobile	Automobile	12	New York
B. C. Min & Engng Rec	British Columbia Mining and Engineering Record	12	Vancouver, B.C.
Beton u Eisen	Beton und Eisen	20	Vienna
Boiler Maker	Boiler Maker	12	New York
Brass Wld	Brass World	12	Bridgeport
Br Build	Brick Builder	12	Boston
Br Engrs Club	Brooklyn Engineers Club	1	New York
Builder	Builder	52	London
Bull Am Ir & St Assn	Bulletin of the American Iron and Steel Association	12	Philadelphia
Bull Bur of Standards	Bulletin of the Bureau of Standards	Irreg.	Washington
Bull Can Min Inst	Bulletin of the Canadian Mining Institute	4	Montreal
Bull Am Inst Min Engrs	Bulletin of the American Institute of Mining Engineers	6	New York
Bull Dept of Labor	Bulletin of the Department of Labor	Irreg.	Washington
Bull Inter Ry Cong	Bulletin of the International Railway Congress	12	Brussels
Bull Sci	Bulletin Scientifique	12	Liége, Belg.
Bull Soc d'Encour	Bulletin de la Société d'Encouragement pour l'Industrie nationale	12	Paris
Bull Soc Int d'Électriciens	Bulletin de la Société Internationale d'Électriciens	12	Paris
Bull Tech d l Suisse Rom	Bulletin Technique de la Suisse Romande	24	Lausanne
Bull Univ of Illinois	Bulletin of the University of Illinois	Irreg.	Urbana, Ill.
Bull Univ of Wisconsin	Bulletin of the University of Wisconsin	Irreg.	Madison, Wis.
Can Dept of Mines	Canadian Department of Mines	Irreg.	Ottowa
Can Elec News	Canadian Electrical News	12	Toronto
Can Eng	Canadian Engineer	12	Toronto
Can Min Jour	Canadian Mining Journal	24	Toronto

Abbreviation	Title	Issues per Year	Place of Publication
Cassier's Mag	Cassier's Magazine	12	New York
Castings	Castings	12	Cleveland, O.
Cement	Cement	12	New York
Chem. Engr	Chemical Engineer	12	Chicago
Chem Met & Min Soc of S Africa	Chemical, Metallurgical and Mining Society of South Africa	12	Johannesburg
Col Guard	Colliery Guardian	52	London
Col Univ Quar	Columbia University Quarterly	4	New York
Compressed Air	Compressed Air	12	New York
Conc-Cem-Age	Concrete-Cement-Age	12	New York
Cornell Civ Engr	Cornell Civil Engineer	12	Ithaca, N. Y.
Die Turbine	Die Turbine	24	Berlin
Die Kälte Ind	Die Kälte Industrie	12	Hamburg
Dom Eng	Domestic Engineering	52	Chicago
Economic Geol	Economic Geology	8	So. Bethlehem
Elec Engng	Electrical Engineering	52	London
Elec Jour	Electric Journal	12	Pittsburgh, Pa.
Elect'n Lond	Electrician	52	London
Elec Paris	Electricien	52	Paris
Elec Rev & W Elec	Electrical Review and Western Electrician	52	Chicago
Elec Rev Lond	Electrical Review	52	London
Elec Ry Jour	Electric Railway Journal	52	New York
Elec Wld	Electrical World	52	New York
Elek Kraft u Bahnen	Elektrische Kraftbetriebe und Bahnen	36	Munich
Elektrochem Zeit	Elektrochemische Zeitschrift	12	Berlin
Elektrotech Rund	Elektrotechnische und Polytechnische Rundschau	52	Potsdam
Elek u Masch	Elektrotechnik und Maschinenbau	52	Vienna
Eng & Min Jour	Engineering and Mining Journal	52	New York
Eng Mag	Engineering Magazine	12	New York and London
Eng News	Engineering News	52	New York
Engng	Engineering	52	London
Engng Contr	Engineering and Contracting	52	Chicago
Eng Rec	Engineering Record	52	New York
Eng Soc W Pa	Engineers' Society of Western Pennsylvania	12	Pittsburgh
Engr Lond	Engineer	12	London
Far East Rev	Far Eastern Review	12	Manila
Foundry	Foundry	12	Cleveland
Gas Wld	Gas World	52	London
Gen Elec Rev	General Electrical Review	12	Schenectady
Génie Civil	Génie Civil	52	Paris
Giess Zeit	Giesserei Zeitung	24	Berlin
Glasers Ann	Glasers Annalen für Gewerbe und Bauwesen	24	Berlin
Glückauf	Glückauf	52	Essen, Germany
Heat & Ven Mag	Heating and Ventilating Magazine	12	New York
Horseless Age	Horseless Age	52	New York
Ice & Refrig	Ice and Refrigeration	12	New York
Il Cemento	Il Cemento	6	Milan
Ind Wld	Industrial World	52	Pittsburgh
Indus Engng	Industrial Engineering	12	New York
Industria	Industria	52	Milan
Ingenieur	De Ingenieur	52	Hague
Ing Ferro	L'Ingegnieria Ferroviaria	24	Rome
Ins Engng	Insurance Engineering	12	New York
Int Marine Engng	International Marine Engineering	12	New York
Ir Age	Iron Age	52	New York
Ir & Coal Trds Rev	Iron and Coal Trades Review	52	London
Ir and Steel Inst	Iron and Steel Institute	1	London

ABBREVIATION	TITLE	ISSUES PER YEAR	PLACE OF PUBLICATION
Ir Trd Rev	Iron Trade Review	52	Cleveland
Jour of Accountancy	Journal of Accountancy	12	New York
Jour Am Brass Found Assn	Journal of the American Brass Founders' Association	Irreg.	Buffalo
Jour Am Foundrymen's Assn	Journal of the American Foundrymen's Association	12	New York
Jour Am Soc Mech Engs	Journal American Society of Mechanical Engineers	Irreg.	New York
Jour Am Soc of Engng Con	Journal of the American Society of Engineering Contractors	12	New York
Jour Am Soc of Nav Engrs	Journal of the American Society of Naval Engineers	4	New York
Jour Assn Eng Socs	Journal of the Association of Engineering Societies	12	Boston
Jour Can Min Inst	Journal of the Canadian Mining Institute	1	Montreal
Jour Cleveland Engng Soc	Journal of the Cleveland Engineering Society	12	Cleveland
Jour Fr Inst	Journal Franklin Institute	12	Philadelphia
Jour Ir & St Inst	Journal of the Iron and Steel Institute	2	London
Jour N E Water Wks Assn	Journal of the New England Waterworks Association	4	Boston
Jour Roy Inst of Brit Arch	Journal of the Royal Institute of British Architects	24	London
Jour Roy United Service Inst	Journal of the Royal United Service Institute	12	London
Jour San Inst	Journal of Sanitary Institute	4	London
Jour S African Assn of Engs	Journal of South African Association of Engineers	12	Johannesburg
Jour Soc Arts	Journal of the Society of Arts	52	London
Jour Transvaal Inst of Mech Engrs	Journal of the Transvaal Institute of Mechanical Engineers	Irreg.	Johannesburg
Jour U. S. Artillery	Journal of United States Artillery	6	Fort Monroe
Jour W of Scot Ir & St. Inst	Journal West of Scotland Iron and Steel Institute	12	Glasgow
Jour Worcester Poly Inst	Journal of Worcester Polytechnic Institute	6	Worcester
Jour W. Soc Engs	Journal of the Western Society of Engineers	6	Chicago
Locomotive	Locomotive	12	Hartford
La Nature	La Nature	52	Paris
Le Yacht	Le Yacht	52	Paris
Mach	Machinery	12	New York
Marine Rev	Marine Review	52	Cleveland
Mech Eng	Mechanical Engineer	52	Manchester
Mech Wld	Mechanical World	52	London
Mem Soc Ing Civ de France	Memoires de la Société des Ingenieurs Civils de France	12	Paris
Met & Chem Engng	Metallurgical and Chemical Engineering	12	New York
Met Work	Metal Worker	52	New York
Mines & Min	Mines and Minerals	12	Scranton
Min Jour	Mining Journal	52	London
Min Mag	Mining Magazine	12	London
Min & Sci Pr	Mining and Scientific Press	52	San Francisco
Min & Engng Wld	Mining and Engineering World	52	Chicago
Mitt d Ver f d Förd d Local u Strassenbahnwesens	Mittheilungen des Vereines für die Förderung des Local und Strassenbahnwesens	12	Vienna
Mnfrs Rec	Manufacturers' Record	52	Baltimore
Monit Tec	Il Monitore Tecnico	36	Milan
Motorwagen	Der Motorwagen	24	Berlin

Abbreviation	Title	Issues per Year	Place of Publication
Munic Engng	Municipal Engineering	12	Indianapolis
Munic Jour & Eng	Municipal Journal and Engineer	12	New York
Nat Geog Mag	National Geographic Magazine	12	Washington
Nature	Nature	52	London
Nineteenth Cent	Nineteenth Century	12	London
N Z Mines Rec	New Zealand Mines Record	12	Wellington
Oest Zeit f Berg- und Hüttenwesen	Oesterreichische Zeitschrift für Berg- und Hüttenwesen	52	Vienna
Phil Jour of Sci	Philippine Journal of Science	4	Manila
Pop Mech	Popular Mechanics	12	Chicago
Pop Sci M	Popular Science Monthly	12	New York
Power	Power	52	New York
Prac Eng	Practical Engineer	52	London
Pro Age	Progressive Age	24	New York
Pro Am Inst Elec Engs	Proceedings American Institute of Electrical Engineers	12	New York
Pro Am Inst Min Engs	Proceedings American Institute of Mining Engineers	12	New York
Pro Am Soc Civ Engs	Proceedings of the American Society of Civil Engineers	12	New York
Pro Am Soc Heat & Ven Engs	Proceedings American Society of Heating and Ventilating Engineers	Irreg.	New York
Pro Am Water Works Assn	Proceedings of the American Water Works Association	1	Charleston
Pro Brooklyn Engrs Club	Proceedings of the Brooklyn Engineers' Club	1	New York
Pro Can Soc Civ Engs	Proceedings of the Canadian Society of Civil Engineers	12	Montreal
Pro Central Ry Club	Proceedings of the Central Railway Club	26	Philadelphia
Pro Engrs Club of Phila	Proceedings of the Engineers' Club of Philadelphia	4	Philadelphia
Pro Engrs Soc of West Penn	Proceedings of the Engineers' Society of Western Pennsylvania	12	Pittsburgh
Pro Inst Civ Engs	Proceedings of the Institution of Civil Engineers	Irreg.	London
Pro Inst Elec Engs	Proceedings of the Institution of Electrical Engineers	Irreg.	London
Pro Inst Mech Engs	Proceedings of the Institution of Mechanical Engineers	Irreg.	London
Pro Inst Min & Met	Proceedings of the Institution of Mining and Metallurgy	12	London
Pro Iowa Ry Club	Proceedings of the Iowa Railway Club	12	Des Moines
Pro N Y Ry Club	Proceedings of the New York Railway Club	12	New York
Pro Ry Club of Pittsburgh	Proceedings of the Railway Club of Pittsburgh	12	Pittsburgh
Pro Soc Engrs	Proceedings of the Society of Engineers	Irreg.	London
Pro S & S-W Ry Club	Proceedings of the Southern and Southwestern Railway Club	1	Atlanta
Pro St. Louis Ry Club	Proceedings St. Louis Railway Club	12	St. Louis
Pro U S Naval Inst	Proceedings of the United States Naval Institute	4	Annapolis
Pro West Ry Club	Proceedings of the Western Railway Club	12	Chicago
Pub Wkly	Publishers' Weekly	52	New York
Qr Rev	Quarterly Review	4	London
Quarry	Quarry	12	London
Queensland Gov Min Jour	Queensland Government Mining Journal	12	Brisbane

ABBREVIATION	TITLE	ISSUES YEAR PER	PUBLICATION PLACE OF
Rev de Mécan	Revue de Mécanique	12	Paris
Rev de Métal	Revue de Métallurgie	12	Paris
Rev d'Econ Indus	Revue d'Economie Industrielle	12	Paris
Rev d'Electricite	Revue d'Electricite	12	Brussels
Rev d'Electrochim et d'Electrométal	Revue d'Electrochimie et d'Electrométallurgie	12	Paris
Rev Indus	Revue Industrielle	52	Paris
Rev Gen des Chemins de Fer	Revue Générale des Chemins de Fer	12	Paris
Rev gen des Sciences	Revue générale des Sciences pures et appliquées	24	Paris
Rivista Marittima	Rivista Marittima	12	Rome
Ry Age Gaz	Railway Age Gazette	52	New York
Rudder	Rudder	12	New York
Ry & Engng Rev	Railway and Engineering Review	52	Chicago
Ry Gaz	Railway Gazette	52	London
Ry & Loc Engng	Railway and Locomotive Engineering	12	New York
Ry Mas Mech	Railway Master Mechanic	12	Chicago
Ry Engng & Maintenance of Way	Railway Engineering and Maintenance of Way	12	Chicago
Schiffbau	Schiffbau	24	Berlin
Sch Mines Quar	School of Mines Quarterly	4	New York
Schweiz Bau	Schweizerische Bauzeitung	52	Zürich
Sci Am	Scientific American	52	New York
Sci Am Sup	Scientific American Supplement	52	New York
Sib Jour Engng	Sibley Journal of Engineering	12	Ithaca
Soc Belge d Élec	Société Belge des Électriciens	12	Brussels
So Elec	Southern Electrician	52	Atlanta
Stahl u Eisen	Stahl und Eisen	52	Düsseldorf
Stevens Ind	Stevens Institute Indicator	4	Hoboken, N. J.
Surveyor	Surveyor	52	London
Tech Mod	Le Technique Moderne	12	Paris
Tram & Ry Wld	Tramway and Railway World	12	London
Trans Am Soc Nav Arch & Mar Engrs	Transactions of the American Society of Naval Architects and Marine Engineers	Irreg.	New York
Trans Assn of Civ Engrs of Cornell Univ	Transactions Association of Civil Engineers of Cornell University	Irreg.	Ithaca
Trans Inst Civ-Engrs of Ireland	Transactions Institute of Civil Engineers of Ireland	Irreg.	Dublin
Trans Inst Eng & Ship in Scot	Transactions Institute Engineers and Shipbuilders in Scotland	Irreg.	Glasgow
Trans N-E Coast Inst of Engrs & Shbldrs	Transactions N.-E. Coast Institute of Engineers and Shipbuilders	12	Newcastle
U S Dept of Agriculture	U. S. Department of Agriculture	Irreg.	Washington
U S Dept of Mines	U. S. Department of Mines	Irreg.	Washington
U S Geol Survey	U. S. Geological Survey	Irreg.	Washington
Wisconsin Engr	Wisconsin Engineer	6	Madison, Wis.
Wlds Work	World's Work	12	New York
Wood Craft	Wood Craft	12	Cleveland
Yale Sci Month	Yale Scientific Monthly	12	New Haven
Zeit d Mitt Motorwagen Ver	Zeitschrift des Mitteleuropäischen Motorwagen Vereines	24	Berlin
Zeit d Oest Ing u Arch Ver	Zeitschrift des Oesterreichischen Ingenieur- und Architekten Vereines	52	Vienna
Zeit d Ver deutscher Ing	Zeitschrift des Vereines deutscher Ingenieure	52	Berlin
Zeit f d ges Turbinenwesen	Zeitschrift für das gesamte Turbinenwesen	36	Munich
Zeit f Werkzeug	Zeitschrift für Werkzeugmaschinen und Werkzeuge	24	Berlin

CLASSIFICATION OF THE INDEX

TO THE USER: This classification should always be consulted, and the page number of the proper division ascertained, before looking for an item in the body of the book.

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Alaska

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Arch Skew Bridges

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Bascule

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Bridge Work

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Brooklyn Bridge

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Cantilevers

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Causeways

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Concrete

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See also Steel, under *Bridges*.

Constantine

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The Sidi Rached Masonry Bridge, Constantine, Algiers. Illustrates and describes this bridge over the Rhumel River, containing one of the large masonry arches of the world. 1800 w. Eng News—Oct. 10, 1912. No. 36749.

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Construction

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Cost Estimating

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Culverts

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Drawbridges

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Failures

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See also Track Reconstruction, under RAILWAY ENGINEERING, *Permanent Way and Buildings*.

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Footbridges

Type of Suspended Footbridge for Signals, Installed at the Ends of the Batignolles Tunnel (Type de passerelles suspendues pour signaux installées aux extrémités du tunnel des Batignolles). M. Froebé. Details of the construction of a signal station on a footbridge. Ills. 2200 w. Rev Gen des Chemins de Fer—July, 1912. No. 34567 G.

Foundations

Bridge Foundations in the Columbia and Willamette Rivers, Near Portland, Oregon. Ralph Modjeski. Explains the geological conditions and illustrates and describes work carried out by the author. 2800 w. Jour Assn of Engng Socs—Sept., 1912. No. 36223 C.

Cylinder-Pier Bridges, C. & N. W. Ry. W. H. Finley. Describes some important American railway bridges of recent construction in which the piers are of the type mentioned, but differing in design from foreign practice. Ills. 3000 w. Eng News—Oct. 24, 1912. No. 36992.

Girders

Calculations for Railway Girders (Calcul d'une poutre de roulement) F. Moguet. Mathematical discussion on the triangular diagrammatic calculation of bridge girders with a dead load of 85 tons. Diagrams. 3800 w. All. Industrielle—May, 1912. No. 32764 D.

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Cross-River Communication at Glasgow. Map, with explanation of conditions and present facilities, with an account of proposed schemes for improving transport. 3000 w. Engng—March 29, 1912. No. 31889 A.

Hell Gate, N. Y.

See Arch, under *Bridges*.

Highway

Highway Bridges and Culverts. Charles H. Hoyt and William H. Burr. General review of fundamental principles that govern properly designed highway bridges and culverts, stating facts relating to their construction. Ills. 21 pages. U S Dept of Agri, Bul. 48—April 6, 1912. No. 32156 N.

Highway Bridges. A. N. Johnson. Read before the first Am. Road Cong. Discusses problems of construction. 3500 w. Eng Rec—Dec. 9, 1911. No. 28708.

The Calculation of Web Members of Iron Half-Parabola Street Bridges (Beitrag zur Berechnung der Gurte des Halbparabelträgers einer eisernen Strassenbrücke). W. Schulz. Formulas adopted and tabulated results. Plate. Serial. 1st part. 1600 w. Elektrotechnische Rundschau—Feb. 15, 1912. No. 31377 D.

Competition for the Construction of a Permanent Highway Bridge across the Rhine at Cologne (Wettbewerb für den Bau einer festen Strassenbrücke über den Rhein bei Köln). Viktor Mautner. Conditions to be complied with and some of the submitted designs. Ills. and plates. 3800 w. Zeit d Oest Ing u Arch Ver—July 5, 1912. No. 35528 D.

See also Viaducts, under *Bridges*.

India

The Great Bridge Across the Lower Ganges, India. Explains conditions and briefly describes the bridge at Sara, and its construction. Map and section. 1500 w. Eng News—Nov. 9, 1911. No. 27753.

Inspection

Instructions for Inspecting Bridges and Culverts, Great Northern Ry. W. B.

Erwin. Gives instructions for guidance of inspectors. 700 w. Engng & Con—Nov. 1, 1911. No. 27648.

Iron Truss

An Old Iron Truss Bridge, 1853-1912. Illustrated description of bridge near Wakefield, N. Y., near New York City. 1500 w. Eng News—April 25, 1912. No. 32366.

Lift Bridges

Lift Bridges on the New Haven Railroad. R. W. Eaton. Illustrated description of the two draw-bridges of the Scherzer rolling lift type. 1200 w. Elec Jour—March, 1912. No. 31601.

See also Bascule, under *Bridges.*

Loads

Rolling Loads on Bridges. J. E. Greiner. From Bul. 139 of the Am. Ry. Engng. Assn. Discusses with rapid increase in weight of rolling stock and whether present bridges have sufficient strength. 2500 w. Ry Age Gaz—Nov. 17, 1911. No. 28080.

Ouse Bridge

The History of the Ouse Bridge. Illustrated account of this old English bridge, and the various structures related to it. Plate. 1400 w. Builder—May 17, 1912. No. 33254 A.

Passyunk, Phila.

See Bascule, under *Bridges.*

Peace Memorial

Proposed Peace Memorial Bridge. Two illustrations of a proposed bridge across the Niagara River between United States and Canada. 700 w. Can Engr—May 23, 1912. No. 33144.

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The Railroad Bridge Over the Pend Oreille River. Illustrated description of unusual design and methods of erection to meet conditions in the state of Washington. 2500 w. Eng Rec—Nov. 4, 1911. No. 27707.

Piers

Building Piers of Two Railroad Bridges in Wet Foundations. Illustrated description of the reconstruction of a bridge across the San Joaquin River in California. 2000 w. Eng Rec—July 13, 1912. No. 34436.

Pier Settlement on the Una Bridge, Brand River, Colo. Illustrated account of the trouble and its cause. 1000 w. Eng News—July 11, 1912. No. 34404.

Plate Girders

The Keystone Bridge of the Western Maryland Railway. Walter Shultz. Illustrated detailed description of a structure at Keystone, Pa. 1000 w. Eng Rec—Jan. 27, 1912. No. 30069.

Girder Bridge with Shallow Trough Floor. A bridge on the C. & N. W. Ry., near West Allis, Wis., is described. Ills. 1500 w. Eng Rec—July 13, 1912. No. 34435.

See also Cantilevers and Erection under *Bridges.*

Pontoon

Ferro-Concrete Sludge-Pumping Pontoon; Manchester Ship Canal. W. Noble Twelvetrees. Illustrated general description of the arrangement and mechanical equipment, and of the construction. 2000 w. Engng—June 14, 1912. No. 33938 A.

The Calcutta-Howrah Floating Bridge. Illustrated description of a design submitted in competition, based on four alternative designs prepared by Sir Bradford Leslie. 3000 w. Engr, Lond—Sept. 13, 1912. No. 36271 A.

Quebec

Notes on Quebec Bridge Competition. Gustav Lindenthal. A critical discussion of submitted designs, the accepted design, and matters related. Ills. 9000 w. Eng News—Nov. 16, 1911. Serial. 1st part. No. 28081.

The Quebec Bridge. Editorial review of the article by Gustav Lindenthal, published in the *Engineering News.* 2000 w. Engng—Dec. 8, 1911. No. 29054 A.

Remarks on the Quebec Bridge, and a Proposed Cantilever Design. C. A. P. Turner. Gives an outline sketch and general description of the author's design. 3000 w. Eng News—May 30, 1912. No. 33318.

The North Main Pier of the Quebec Bridge. Plan of the works and illustrated description of the construction plant and methods. 2000 w. Engr, Lond—April 12, 1912. No. 32282 A.

Railway Bridges

A Double-Track 170-Foot Through Riveted Span. Illustrated detailed description of a bridge having a trough floor carried on trough floor beams at truss panel points. 1000 w. Eng Rec—Dec. 16, 1911. No. 28995.

A New Double-Track Railroad Bridge Over the Rhine near Homberg. Profile and brief description of a bridge having the longest unconnected trusses in Europe. 1500 w. Eng Rec—Feb. 3, 1912. No. 30254.

Reconstruction

Reconstruction of Bridge 298, New York Central Railroad—Concreting in Cold Weather. Charles E. Anderson. Describes the construction of a 6-track structure with concrete abutments and piers. Ills.

2500 w. Engng & Con—Dec. 6, 1911. No. 28642.

Widening a Pittsburg Bridge. Describes work on the old Smithfield St. bridge across the Monongahela River. Ills. 3500 w. Eng News—April 11, 1912. No. 31937.

The Work of Enlarging the Bridges Across the Seine at Puteaux and Neuilly-St. James (Note sur les Travaux d'Élargissement des Ponts sur la Seine a Puteaux et a Neuilly-Saint James). M. Caldagnès. Illustrated description of the work. Plates. 4000 w. Ann des Ponts et Chaussées—Jan.-Feb., 1912. No. 32079 E + F.

Bridge Reconstruction and Extension at Finsbury Park Station. Henry William Sadler. Illustrates and describes the first portion of alterations on the down-side at Finsbury Park, Great Northern Ry. 1800 w. Inst of Civ Engrs, No. 3943—May, 1912. No. 33162 N.

Bridge Building on Sedgemoor. R. Morton Stone. Illustrated account of the rebuilding of bridges near Glastonbury, of interest because of the means adopted to secure stable foundations. 2000 w. Surveyor—June 14, 1912. No. 33930 A.

Reconstruction of the Canadian Pacific Bridge Over the St. Lawrence. Illustrated description of the reconstruction of the bridge between Highlands and Caughnawaga. 1000 w. Ry Age Gaz—Oct. 11, 1912. No. 36768.

Reinforced Concrete

Method and Cost of Constructing a Reinforced Concrete Road Bridge. C. A. Bingham. A new bridge in Cumberland Co., Penn., is described. Ills. 700 w. Engng & Con—March 27, 1912. No. 31624.

Concrete Highway Bridges. George H. Herrold. Read before the Minn. Engrs. Soc. Considers reinforced concrete bridge building. 1200 w. Cement—Feb., 1912. No. 31498 C.

Reinforced Concrete Bridges with Overhead Arches (Ponti in cemento armato ad arcate superiori). Plans and illustrations of several constructions. Serial. 1st part. 3000 w. Il Cemento—Feb. 29, 1912. No. 31412 D.

Recent Practice in Reinforced Concrete Bridge Building in the City of Pittsburgh. J. A. Ferguson. Explains the methods used in selecting the best types to meet conditions. Ills. General discussion. 16500 w. Pro Engrs' Soc of W Penn—April, 1912. No. 33120 D.

The Risorgimento Bridge (Il Ponte del Risorgimento sul Tevere in Roma). Illustrated description of the method of construction. Serial. 1st part. 2500 w. Il Cemento—Oct. 30, 1911. No. 28495 E.

The Ponte del Risorgimento Across the Tiber at Rome (Il Ponte del Risorgimento sul Tevere in Roma). C. Parvopassu. Description of reinforced-concrete arched bridge newly erected. Ills. 6000 w. Ingeg Ferroviaria—Oct. 1, 1911. No. 28483 E.

The 328-Ft. Reinforced-Concrete Arch Bridge Across the Tiber, at Rome. Illustrates and describes the design and construction of the longest masonry arch in the world. 2000 w. Eng News—Nov. 30, 1911. No. 28529.

The Risorgimento Bridge, Rome. W. Noble Twelvetrees. Illustrated description of the 328 ft. arch across the Tiber, in Rome, Italy, and its erection and testing. 4000 w. Engng—Dec. 1, 1911. No. 28778 A.

The Résorgimento Bridge across the Tiber at Rome (Le Pont du Résorgimento, sur le Tibre, a Rome). Louis Quesnel. Description of bridge, pier foundation, approaches, mode of applying reinforcing, rapidity of construction, etc. Ills. and Plates. 8000 w. Ann des Ponts et Chaussées—Jan.-Feb., 1912. No. 32077 E + F.

American Impressions of the Risorgimento Bridge at Rome. Henry Grattan Tyrrell. Illustrated discussion of the most interesting features. 2500 w. Can Engr—June 27, 1912. No. 34132.

Reinforced Concrete Bridge Across the Almendares River, Havana, Cuba. Discussion of the paper by Eugene Klapp and W. J. Douglas. 4500 w. Pro Am Soc of Civ Engrs—Nov, 1911. No. 28374 F.

A Novel Form of Reinforced-Concrete Arch Bridge Built in Thuringia, Germany. Illustrated description of an interesting type. The arch has a span of 173 ft. 11 ins., the roadway passing between the ribs and suspended from them. 2000 w. Engng & Con—Dec. 6, 1911. No. 28639.

Reinforced Concrete Railway Bridge over the Werra River at Heringen (Die Werra-Brücke bei Heringen eine Eisenbahnbrücke aus Eisenbeton). Description of arch span of 172 feet. Illus. 1750 w. Schweiz Bau—Nov. 11, 1911. No. 28819 B.

The Iller Bridge at Martinszell in Algau (Die Illerbrücke bei Martinzell im Algäu). Hermann Goebel. Details in the construction of a reinforced concrete bridge to replace previous structure destroyed by floods. Ills. 1700 w. Beton u Eisen—Apr. 1, 1912. No. 32022 E.

The Highway Bridge over the Enz in Pforzheim (Die Rossbrücke über die Enz in Pforzheim). A. Kleinlogel. Details in the construction of this bridge. Ills. Serial. 1st part. 2400 w. Beton u Eisen—May 8, 1912. No. 33519 E.

Reinforced Concrete Bridge over the Muota at Hinter-Ibach (Eisenbetonbrücke über die Muota in Hinter-Ibach.) H. Gubelmann. Detailed description of arched highway bridge, with span of 118 feet. Ills. 1500 w. Schweiz Bau—June 1, 1912. No. 33545 D.

Erection of Reinforced Concrete Beam Bridges without Scaffolding, by the Use of Cableways (Herstellung von Eisenbetonbalkenbrücken ohne Lehrgerüst mit Hilfe von über die Oeffnung gespannten kabeln). A. Seboldt. Mathematical discussion. Serial. 1st part. Ills. 2800 w. Beton u Eisen—Nov. 27, 1911. No. 28882 E.

A Reinforced Concrete Through Girder Bridge. P. A. Shaw. Illustrated description of a bridge at Rupps Mill, Pa. 800 w. Eng Rec—Dec. 23, 1911. No. 29146.

Reinforced Concrete Bridge at University College, Cork. Illustrates and describes a bridge pleasing in appearance and of moderate cost. 1500 w. Builder—Dec. 29, 1911. No. 29446 A.

Reinforced Concrete Bridges Built Over Current River, in the City of Port Arthur, Ontario. L. M. Jones. Illustrates and describes designs and construction of bridges completed in the year 1911. 1500 w. Can Engr—Feb. 15, 1912. No. 30452.

Description of Reinforced Concrete Arch Over Current River, City of Port Arthur, Ontario. L. M. Jones. Ills. 2200 w. Can Engr—July 4, 1912. No. 34295.

The Central Avenue Bridge at Rochester, N. Y. Illustrated description of a reinforced concrete structure combined with a concrete dam and head-works for power development built under unusual conditions. 2000 w. Eng Rec—March 2, 1912. No. 30984.

Reinforced Concrete Bridge at Farnworth. Illustrations, with brief description of a bridge on the Kahn system, built over the Cheshire Lines Ry. 500 w. Engng—March 1, 1912. No. 31146 A.

A Concrete Bridge at Kansas City. Illustrated description of an artistic reinforced-concrete bridge over Brush Creek, and its construction. 1200 w. Cement Age—March, 1912. No. 31457.

The Reinforced-Concrete Bridge at Tempe, Ariz. Illustrates and describes details in the construction of a bridge across the Salt River. 1200 w. Eng News—March 28, 1912. No. 31629.

A Six-Track Railroad Bridge over Humphrey Street at New Haven. Illustrated description of a reinforced concrete structure built in sections without causing any interruption of the train service. 2200 w. Eng Rec—April 13, 1912. No. 31953.

The Walnut Street Bridge, Des Moines, Iowa. Illustrated description of the construction of a reinforced concrete bridge, including the removal of an existing steel bridge. 2500 w. Eng Rec—May, 1912. No. 32585.

The First Reinforced Concrete Arch Bridge in Japan. Brief illustrated description of a bridge at Yokohama. 500 w. Eng News—May 9, 1912. No. 32688.

A Reinforced Concrete Highway Bridge at Columbus, Georgia. Illustrated description of a five-span structure made up of Melan arches with clear spans of 128 feet. 2000 w. Eng Rec—July 6, 1912. No. 34276.

See also Arches, and Viaducts, under *Bridges*; and Cost Estimating under *Construction.*

Removal

Moving the Passaic River Bridge at Newark, N. J. Illustrated account of the rapid shifting on scows of a double-track 212-foot span in service. 1600 w. Eng Rec—April 20, 1912. No. 32196.

Complicated Railway Bridge Movement. Brief illustrated description of the removal at Westerly, Rhode Island, of two heavy single-track deck spans on the N. Y., N. H., & H. R. R. without interruption of traffic. 1500 w. Eng Rec—Oct. 12, 1912. No 36780.

Repairs

Replacing Worn Bridge Pins in the Field. H. C. Lothholz. Illustrates and describes a novel method used on the C., M. & St. P. Ry. 1200 w. Eng News—Jan. 25, 1912. No. 30094.

Repairing the Substructure of the Bangor-Brewer Bridge. E. E. Greenwood. Describes work on a bridge across the Penobscot River, in Maine, consisting of enclosing old piers in a jacket of reinforced cencrete. 1500 w. Eng Rec—Feb. 24, 1912. No. 30734.

Replacement

Removal of Girders on the Kiul Bridge on the East Indian Railway. Illustrated description of the work of regirdering a nine-span bridge. 1500 w. Ry Gaz, Lond—July 12, 1912. No. 34712 A.

Risorgimento

See Reinforced Concrete, under *Bridges.*

Skew

See Viaducts, under *Bridges.*

Steel

Some Observations on the Erection of Small Steel Highway Bridges. Neal B. Garver. Describes work in the middle west. The spans were of the Pratt type with reinforced-concrete floors. 2000 w. Eng Rec—Dec. 23, 1911. No. 29145.

Weak Points in the Construction of Small Steel Highway Bridges. Neal B. Garver. Abstract of a paper before the Ill. Soc. of Engrs. & Survs. Discusses modifications needed in methods. 1500 w. Eng News—Feb. 15, 1912. No. 30437.

Systems of Construction of Modern Steel Bridges (I sistemi di costruzione dei moderni ponti in ferro). U. Conte. Review of some of the construction features in recent large bridges. Ills. 4000 w. Ann della Soc d Ing e d Arch Ital—Mar. 16, 1912. No. 32305 E.

Recent Steel Bridge Erection (Die Aufstellung neuerer eiserner Brücken). A. Rohn. A compilation of methods used in numerous instances. Ills. Serial. 1st part. 3500 w. Schweiz Bau—Dec. 2, 1911. No. 29721 B.

The Steel Arch Bridge Over the St. Croix River; Minneapolis, St. Paul & Sault Ste. Marie Ry. Pierce P. Furber. Illustrated description of important reconstruction work. 2000 w. Engng & Con—Dec. 6, 1911. No. 28641.

The St. Croix River Arch Bridge; Minneapolis, St. Paul & Sault Ste. Marie Ry. Pierce P. Furber. Illustrated detailed description of important reconstruction work. 4500 w. Eng News—Dec. 28, 1911. No. 29170.

The Erection of the Superstructure of the St. Louis Municipal Bridge (River Crossing). S. W. Bowen. Gives details of the erection of three 670-ft. steel bridge spans across the Mississippi. Ills. 5500 w. Engng & Con—Dec. 13, 1911. No. 28958.

The Substructure of the St. Louis River Bridge. Illustrated detailed description of substructure work for a 4-track steel viaduct and center swing bridge, near New Duluth, Minn. 2000 w. Eng Rec—May 25, 1912. No. 33080.

Erecting 110-ft. Plate-Girders with a Long-Reach Derrick Car. E. A. Gibbs. Illustrated description of erection methods used on an extension of the W. Maryland Ry. 1500 w. Eng News—March 21, 1912. No. 31469.

Bridge Construction on the Oregon Trunk Railway. Illustrates and describes steel structures unusual in design and method of erection. 2000 w. Ry Age Gaz—March 29, 1912. No. 31637.

The Bridge over the Lys (Pont sur la Lys). A. Vierendeel. Calculations and formulae used in the design of this 44.4 meter steel bridge. Ills. 7000 w. Alliance Industrielle—Mar., 1912. No. 31415 D.

Mohawk River Bridge, Schenectady, N. Y. Illustrates and describes a structural steel bridge of five spans. 3500 w. Ry Engng & Main of Way—Oct., 1912. No. 36855.

North Side Point Bridge, Pittsburgh. Illustrated description of a modern heavy truss bridge over the Allegheny River. 2500 w. Eng News—Oct. 17, 1912. No. 36892.

Independence Boulevard Bridge, B. & O. C. T. R. R. Illustrated description of a steel structure encased in concrete so as to give the appearance of a masonry structure. 2500 w. Ry Engng & Main of Way—Oct., 1912. No. 36857.

See also Bascule, Cantilever, Reconstruction, Suspension and Viaducts, under *Bridges.*

St. Louis, Mo.

The St. Louis Municipal Bridge. S. W. Bowen. Illustrated description of this combined railway and highway structure being built across the Mississippi River. 6500 w. Eng News—Feb. 8, 1912. No. 30355.

Stresses

Relation of Heavy Mallet Locomotives to Bridge Stresses. Information from recent inquiries of roads using Mallet engines. 1200 w. Eng News. April 18, 1912. No. 32212.

Strengthening

The Strengthening of Damodar Bridge on the Bengal-Nagpur Railway. Douglas Henry Remfry. Work made necessary by heavy coal traffic is described. Gives drawings. 1800 W. Inst of Civ Engrs No. 3893—May, 1912. No. 33168 N.

Suspension

The Manhattan Bridge. Howard R. Cummings. Illustrated detailed description of one of the latest examples of suspension construction. 4500 w. Cassier's Mag—Jan., 1912. No. 29882 B.

The New Constantine Bridge (Algiers) (Les nouveaux ponts de Constantin,—Algérie). G. L. le Cocq. Description of the construction of this semi-rigid suspension bridge over the Rummel Gorge, 164 meters long between abutments. Ills. 4700 w. Génie Civil—Dec. 30, 1911. No. 29797 D.

Suspension Bridge over the Inn at Brail (Hängesteg über den Inn bei Brail). Details of a temporary construction bridge for the Phäetian Railway in Switzerland. Ills. and plans. 1000 w. Schweiz Bau—May 11, 1912. No. 33522 D.

Massena Center Suspension Bridge. John Berg. Illustrated description of a 400-foot span with twisted cable strands and saw-tooth anchorage footings, over the La Grasse River. 2500 w. Eng Rec—Oct. 5, 1912. No. 36546.

Susquehanna River

Deck Spans of Susquehanna River Bridge. Illustrated detailed description of features of the bridge at Havre-de-Grace. 1500 w. Eng Rec—June 8, 1912. No. 33623.

Temporary

A Temporary Bridge Over the Passaic River, Newark, N. J. Illustrated description of a pile trestle by-pass with two bascule spans to permit replacing a swing span. 1200 w. Eng Rec—Sept. 14, 1912. No. 35938.

New Temporary Bridges at Saint Louis, Senegal (Les nouveaux appontements de Saint Louis du Senegal). Alfred Jacobson. Maps and details showing erection methods for bridges across the Senegal River in Africa. Ills. & Plate. 6300 w. Genie Civil—Sept. 28, 1912. No. 36682 D.

Timber

Round Timber Bridge at Concrete, Wash. Illustrated description of a bridge on the Baker River & Shukaan R. R. 800 w. Ry Engng & Main of Way—Oct., 1912. No. 36856.

Transporters

Transporter Bridges. Henry Grattan Tyrrell. Reviews the development of this type of bridge, describing examples of various types. 3500 w. Ap Sci—July, 1912. No. 35316 C.

Novel Transportation Bridge in Great Britain. F. C. Coleman. Brief illustrated description of a suspended ferry across the River Tees. 900 w. Sci Am—Dec. 16, 1911. No. 28976.

Viaducts

Railway Viaducts. Discusses the conditions making viaducts necessary, features of design and construction. 2000 w. Engr, Lond—July 26, 1912. No. 35170 A.

Viaduct Approach of Cellular Type. S. W. Bowen. Illustrates and describes a cellular type of construction for a reinforced concrete viaduct, giving details of cost. 2500 w. Eng News—May 30, 1912. No. 33320.

Reinforced Concrete Shear Beams (Gerberträger aus Eisenbeton). Stoetzer and Böhm. Describes a viaduct supported by reinforced concrete beams. Ills. 1500 w. Beton u Eisen—Jan. 3, 1912. No. 30552 D.

A Reinforced Concrete Viaduct with Steel Swing Bridge. (Note sur le Viaduc en Béton Armé avec Travée Tournanté Métallique). M. P. Alexandre. Description of such a bridge in France. Ills. 4000 w. Ann des Ponts ét Chaussées—Oct., 1911. No. 28498 E + F.

Construction on the Florida East Coast Extension. R. M. De Garmo. Illustrated description of the construction of the Paut Channel viaduct, the last section of a continuous bridge over 6¾ miles in length. 1700 w. Cornell Civ Engr—Nov., 1911. No. 28330 C.

The Sitter Viaduct, Switzerland. Illustrated description of the erection of a steel and masonry viaduct across the Sitter River, near Saint Gall. Falseworks were employed. 1200 w. Builder—Nov. 17, 1911. Serial. 1st part. No. 28338 A.

The Reinforced Concrete Viaduct at Gilbert Avenue, Cincinnati. Frank L. Raschig. Plan, sections, history and description of this viaduct. 4500 w. Engng & Con—Feb. 7, 1912. No. 30375.

New Radcliffe Viaduct on Great Northern of England. C. Van Langendonck. Illustrated description of a viaduct 1254 ft. long, built originally of timber, but recently rebuilt of brick. 700 w. Ry Age Gaz—Feb. 9, 1912. No. 30360.

Reinforced-Concrete Viaduct Carrying a Seattle Street over Railway Yards. E. E. Adams. Illustrates and describes work done by the Great Northern Ry. 2500 w. Eng News—March 21, 1912. No. 31465.

The Fifth Street Viaduct at Fitchburg, Mass. Illustrated description of a reinforced concrete structure with deck arch spans of about 32 to 76 feet and a 204-foot through arch span. 1500 w. Eng Rec—March 9, 1912. No. 31086.

The Weston Road Concrete Viaduct at Toronto. Illustrated description of a reinforced concrete viaduct approaching a steel truss span which carries this road over the Canadian Pacific R. R. tracks. 1200 w. Eng Rec—April 20, 1912. No. 32197.

The Connellsville Double-Track Viaduct. Illustrates and describes a long solid-floor plate-girder structure with arched masonry piers built jointly by two railroads. 2000 w. Eng Rec—April 6, 1912. No. 31821.

The Little Salmon River Viaduct, National Transcontinental Railway. R. F. Uniacke. Drawings and illustrated description of the design and construction. 5000 w. Can Soc of Civ Engrs—May, 1912. No. 33176 N.

The Little Salmon River Viaduct, National Transcontinental Railway. Illustrates and describes an interesting example of bridge work. 2200 w. Can Engr—May 23, 1912. No. 33143.

Viaduct across the Valley at Erbach, Westerwald (Talübergang bei Erbach, Westerwald). Herr Koester. Details in construction and design of the 292 m. reinforced concrete viaduct between Marienberg and Erbach. Ills. Serial, 1st part. 1700 w. Beton u Eisen—April 20, 1912. No. 32710 E.

Kingshighway Viaduct, St. Louis, Mo. Mont. Schuyler. Illustrates and describes a large concrete structure forming a part of the city boulevard system. 6000 w. Eng News—June 27, 1912. No. 34113.

The Tunkhannock Creek Bridge on the Lackawanna Railroad. Illustrated description of a concrete bridge to be built near Nicholson, Pa., the largest ever built for railway purposes. 600 w. Eng News—June 13, 1912. No. 33706.

Street Bridge Over the Great Northern Ry. Tracks in Minneapolis. O. B. Robbins. Drawings and description of three overhead street crossings of interesting designs. 2000 w. Eng News—June 20, 1912. No. 33858.

A Heavy Short-Span Overhead City Bridge. Illustrates and describes details of a bridge on 11th St., New York, across eleven tracks of the N. Y. C. & H. R. R., having many interesting construction features. 1500 w. Eng Rec—July 20, 1912. No. 34679.

Some Notes on the Oakville Viaduct and the Dynamiting of the Condemned Arch Ribs, August 12, 1912. C. H. Cunningham. Illustrated description of the work and its destruction. 1000 w. Can Engr—Sept. 5, 1912. No. 35819.

Some Notes on the Oakville Viaduct and the Dynamiting of the Condemned Arch Ribs, August 12, 1912. C. H. Cunningham. Illustrated account of destruction made necessary by serious faults in the construction. 800 w. Ap Sci—Sept., 1912. No. 37019 C.

Four-Track Columbus Avenue Viaduct. Illustrated description of a skew bridge with square spans and irregular auxiliary column bents, at Mount Vernon, N. Y. 1200 w. Eng Rec—Oct. 26, 1912. No. 37006.

Seventh Street Viaduct at Des Moines, Iowa. Illustrates and describes interesting details of the building of this structure of steel covered with concrete. 2200 w. Ry Age Gaz—Oct. 4, 1912. No. 36512.

Winnipeg

The Red River Bridge for the National Transcontinental Railway. A general illustrated description of the more important features in the design and construction of this double-track bridge at Winnipeg. 3500 w. Can Engr—April 18, 1912. No. 32227.

Wood-Arch

The Hetzer Wood Construction. (Die Hetzersche Holzhauweise). Description of arch type of bridges and roofs. Ills. 3500 w. Schweiz Bauzeitung. Oct. 14, 1911. No. 28463 B.

Wooden Trusses

A 162-foot Wooden Truss for Construction Work. Illustrates and describes a temporary bridge near Tacoma, Wash., and its construction. 1500 w. Eng Rec—Nov. 25, 1911. No. 28293.

CONSTRUCTION

Architecture

Modern Tectonics (Die neuzeitige Tektonik). L. Erhard. Discussion of modern architecture and compares structural design with the design of the human frame. Ills. 4400 w. Zeit d Oest Ing u Arch Ver—Dec. 8, 1911. No. 29750 D.

Construction Methods in Ancient Times (Les procédés de construction dans l'antiquité). A. Le Vergnier. Illustrated. description of methods employed as revealed by studies of existing structures. Serial. 1st part. 5600 w. Genie Civil—Aug. 17, 1912. No. 35592 D.

Beams

Historic Notes on Metallic Beams and Girders. R. B. Woodworth. Aims to show the steps passed in the evolution of beam and girder design. Ills. 24500 w. Pro Engrs' Soc of W Penn—Feb., 1912. No. 31444 D.

The Stresses in Curved Beams. Ewart S. Andrews. Aims to obtain constants, based upon an analysis for rectangular sections, which will enable the designers to use the Pearson-Andrews theory without difficulty. 1000 w. Engr, Lond—April 19, 1912. No. 32464 A.

The True Bending Moments of Beams with Various Degrees of Fixity. Abstract from a paper by Maurice Behar, read before the Concrete Inst. Opposing the adoption of a method proposed for reinforced concrete work. 2000 w. Archt, Lond—April 19, 1912. No. 32509 A.

The Calculation of Continuous Beams with Unstable Moments of Inertia Upon Elastic Rotated Supports (Zur Berechnung kontinuerlicher Träger mit veränderlichem Tragheitsmoment auf elastisch drehbaren Stützen). A. Joho. Mathematical discussion on unsymmetrical beams. Diagrams. 3000 w. Schweiz Bau—June 15, 1912. No. 34530 D.

See also Columns and Reinforced Concrete Beams, under *Construction.*

Breweries

The New Municipal Brewery in Pilsen (Die Neuanlagen des Bürgerlichen Brauhauses in Pilsen). Fr. Spalek. Plans and description of a new plant. Serial. 1st part. 2400 w. Zeit d Oest Ing u Arch Ver—Jan. 19, 1912. No. 30537 D.

Building Construction

Superstructure of the Merchants and Manufacturers Exchange Building, New York. Drawings and description of a tall business building carried on a girder platform over the depressed tracks and yard of a great terminal station. 1500 w. Eng Rec—May 18, 1912. No. 32928.

Construction of the New York Municipal Building. Illustrates and describes construction details of this large building, costing about $11,000,000. 5000 w. Eng Rec—Sept. 7, 1912. No. 35805.

Girders and Trusses in the Guaranty Trust Building, New York. Illustrates and describes building details of an 8-story building with cantilever foundation girders, long trusses, tall columns and floor bracing for very high, wide rooms. 2000 w. Eng Rec — Aug. 31, 1912. No. 35659.

Building Remodeling

Shoring and Remodeling the Front of a New York Building. Describes methods used in reconstructing the façade of a building made necessary by a municipal ordinance. 1200 w. Eng Rec—March 16, 1912. No. 31219.

Building Removal

Moving, Turning and Lowering a Large Three-Story Brick Office Building. Illustrated description of the raising of a 2550-ton building on needles and cribbing, revolving it about 90 degrees and moving it 300 feet on a crooked line in 40 days. 1500 w. Eng Rec—Sept. 14, 1912. No. 35942.

Buildings

Model Tenements in Paris (Les Immeubles a Loyers a bon Marché, a Paris). A. Bidault des Chaumes. Description of a number of model tenement buildings of recent construction. Ills. Serial. 1st part. 4400 w. Génie Civil—Nov. 11, 1911. No. 28860 D.

Regulations for Separate Building Construction (Vorschriften für offene Bebauung). Stating the new building regulations at Zurich requiring spaces between houses, etc., in certain zones. Plans. 2500 w. Schweiz Bau—Feb. 3, 1912. No. 30544 D.

The Service Equipment of a Combined Theatre and Office Building. W. A. Ehlers. Illustrated description of the equipment of Riggs' theatre and office building, Washington, D. C. 4000 w. Eng News—July 18, 1912. No. 34649.

A Notable Skyscraper. Illustrated description of the Bankers' Trust Building in New York. 2000 w. Cassier's Mag—July, 1912. No. 34918 B.

A New 35-Story Office Building in Seattle. Describes a building with pyramidal roof, grillage foundations on earth, girders with edge-bearing webs, wind-brace wall girders, etc. Ills. 2500 w. Eng Rec—July 6, 1912. No. 34277.

Reinforced Concrete Construction on the Offenbach Technical Academy (Die Eisenbetonkonstruktionen am Neubau der Technischen Lehranstalten Offenbach a. Main). Jean Wörrlein. Details of construction. Ills. 2600 w. Beton u Eisen—June 12, 1912. No. 34542 E.

Poured Houses in Holland. George E. Small. Illustrates and describes this system of building reinforced concrete. 1200 w. Cement Age—Feb., 1912. No. 30758 C.

A Reinforced Concrete Theatre in Frankfort a M. (Die Eisenbetonkonstruktionen im Neuen Theater zu Frankfort a. M.). E. Neugeboren. Plans and details of construction. Ills. 2200 w. Beton u Eisen—Jan. 18, 1912. No. 30557 D.

The Klagenfurt "Jubilee Theatre" (Das Klagenfurter "Jubiläums - Stadttheater). Em. Eichholz. Description of new municipal theatre built of reinforced concrete. Ills. Serial. 1st part. 2200 w. Beton u Eisen—Feb. 2, 1912. No. 30559 D.

The Travellers' Hall on the Island of Borkum (Die Wandelhalle auf der Insel Borkum). A. Ritter. Detail of a large pleasure resort built of reinforced concrete. Ills. 4200 w. Beton u Eisen—Jan. 3, 1912. No. 30553 D.

Reinforced Concrete Construction of the Munich Market (Die Eisenbetonkonstruktionen der Grossmarkthalle in München). B. Rueb and A. Keller. Giving the calculations for bracing projections, and other details. Ills. and plans. 3800 w. Beton u Eisen—Feb. 26, 1912. No. 31354 E.

The Church of St. Magdalen, Strasburg, Alsace (Die Magdalenenkirche in Strassburg i. Els.). E. Conrad. Details of the construction of a reinforced concrete church. Ills. 2700 w. Beton u Eisen—Feb. 26, 1912. No. 31350 E.

The "Friedenskirche" in Offenbach and Its Construction (Die Friedenskirche in Offenbach a M. und ihre Konstruktion). Herr Steinberger. Details in the construction of this church of reinforced concrete. Ills. 3200 w. Beton u Eisen—May 28, 1912. No. 33548 E.

A Reinforced Concrete County Court House. Illustrates and describes details of a new court house in Fulton Co., Ga. A 9-story structure with concrete pile foundations and framing and roof trusses built of reinforced concrete. 1700 w. Eng Rec—April 20, 1912. No. 32192.

A Reinforced Concrete Sky-scraper in Stockholm (Ein Wolkenkratzer aus Eisenbeton in Stockholm). L. E. Hellstedt. Details of construction of twelve-storied combined office and apartment building. Ills. 1100 w. Beton u Eisen—Apr. 1, 1912. No. 32023 E.

Construction of the Department Store "Mariahilfer Zentralpalast" (Bau des Warenhauses "Mariahilfer Zentralpalast"). Hans Mikula. Details of the construction of a novel circular ladies' department store from wood and reinforced concrete in Vienna. Ills. Serial. 1st part. 2200 w. Beton u Eisen—Apr. 1, 1912. No. 32021 E.

See also Woolworth Building, under *Construction.*

Building Specifications

New Prussian Specifications on the Erection of High Buildings (Die neuen preussischen Bestimmungen für die Berechnung von Hochbaukonstruktionen). K. Löhle. New orders issued by the Prussian minister. 1800 w. Schweiz Bauzeitung. Oct. 7, 1911. No. 28461 B.

Building Vibrations

Eliminating Vibrations from a Six-Story Loft Building. An account of how vibrations from heavy printing presses ceased when the presses were turned 90 degrees. Ills. 2000 w. Eng Rec—Nov. 25, 1911. No. 28288.

Caissons

Open Caisson Foundations of the Newark Turnpike Bridge. Describes a bridge across the Hackensack River, in which the river piers were built in floating caissons. Ills. 2000 w. Eng Rec—Dec. 16, 1911. No. 28996.

Caisson Foundations for the Seamen's Church Institute Building. Maurice Deutsch. Detailed description of foundation work for this New York 12-story building above curb. The lowest basement floor is 31 feet below curb. 2500 w. Sch of Mines Qr—July, 1912. No. 34622 D.

Floating Docks for Setting Caisson Blocks of Reinforced Concrete in Kobe Port, Japan (Dock flottant pour l'immersion de caissons-blocs en beton armé du port de Kobé—Japon). A. Delisle. Description of dock and caissons. Ills. 2400 w. Génie Civil—Jan. 13, 1912. No. 30615 D.

See also Foundations, under *Construction.*

Campanile

The Reconstruction of the Campanile in the Plaza of St. Marks, Venice. Charles A. Brassler. Illustrated description of the new tower and its erection. 2500 w. Am Archt—May 22, 1912. No. 33011.

Reinforced Concrete in the Campanile of San Marco (Il cemento armato nel Campanile di S. Marco). A. Danusso. Description of the method of application in the reconstruction of the St. Mark tower. Ills. and plate. 3500 w. Il Cemento—May 15, 1912. No. 32791 D.

Causeway

Galveston's Big Task Ended. Albert Phenis. Remarks on the significance of the completion of the great concrete causeway. Ills. 3000 w. Mfrs' Rec—May 23, 1912. No. 33038.

Cement

Building of Cement Plaster or Stucco Houses. P. P. Comoll. Gives suggestions as to construction with special regard to the ornamental features. 1700 w. Cement & Engng News—May, 1912. No. 32857.

Cement Gun

The Cement Gun, Gunite, and Their Uses. Illustrated description of a new process for supplying cement, which dispenses with forms, and some of the uses to which it is applied. 2000 w. Engr, Lond—Jan. 19, 1912. No. 30181 A.

The "Cement Gun." Ralph C. Davison. Illustrates and describes examples of plaster work done with a hose. 1800 w. Sci Am—Jan. 13, 1912. No. 29541.

The Cement Gun. William A. Jordan. Illustrates and describes this device for placing concrete, its use, tests, etc. General discussion. 9000 w. Jour Am Soc of Engng Con—Dec., 1911. No. 30900 N.

Properties of Hand Mixed and Cement-Gun Mortars. A report of comparative tests and results. 1500 w. Eng Rec—March 9, 1912. No. 31088.

Cement Plants

Economic Construction of Storage Bins and Trestles at Cement Plants. W. S. Marston. Deals with work at Buffington, Indiana, reporting investigations in connection with trestle approaches and storage bins. Plates. Discussion. 5500 w. Jour W Soc of Engrs—Oct., 1911. No. 28244 D.

Coal Pockets

100,000 Cu. M. Coal Silo for the Grasbrook Gas Plant, Hamburg (Kohlensilo von 100,000 m^3 Fassungsraum für die Stadt Hamburg, Gaswerk Grasbrook). Josef Gaugusch. Details in the design and construction of large reinforced-concrete silo. Ills. 3900 w. Beton u Eisen—Sept. 13, 1912. No. 36612 E.

Iron Coal-Bunkers (Eiserne Kohlenbunker). Richard Blumenfeld. Gives calculations in the design of two large coal bunkers built for Breitfeld, Danek & Co. in Schlan. Ills. 2200 w. Zeit d Ver deutscher Ing—Sept. 7, 1912. No. 36619 D.

Coffer-Dams

General Methods of Difficult Cofferdam Construction at Koochiching Falls Power Development, Minnesota. H. C. Ash. Read before the Minn. Surv. & Engrs. Soc. (Condensed). Describes novel methods. Ills. 3000 w. Engng & Con—March 13, 1912. No. 31176.

See also same heading, under *Waterways and Harbors.*

Columns

The Theory of Columns. R. F. Deimel. Mathematical investigation. 700 w. Stevens Ind—Jan, 1912. No. 33023 D.

Some Notes on Column Design. F. Tissington. Urges the use of a standard series of curves, and explains why he adopted Prof. Fidler's formula. 1000 w. Can Engr—March 21, 1912. No. 31473.

The Designing of Bases for Columns. Considers the elements of importance to secure stability, safe loads for different foundations, and for various types. 1200 w. Prac Engr—Dec. 15, 1911. No. 29223 A.

Fixed-End Columns in Practice. C. T. Morris. A study of formulae for fixed-end columns, showing they should be used with great caution. Diagrams. 2000 w. Eng News—Nov. 2, 1911. No. 27652.

Tests on Steel Columns. L. R. Wilson. Reports a series of tests in 1911 on several steel columns of a size comparable with many in commercial service. Ills. 3500 w. Ap Sci—Jan., 1912. No. 30018 C.

Tests of Columns: An Investigation of the Value of Concrete as Reinforcement for Structural Steel Columns. Arthur N. Talbot and Arthur R. Lord. Investigations to obtain information upon the action of such columns. Ills. 44 pages. Bul Univ of Ill, No. 56—March 4, 1912. No. 32155 C.

Concrete Column Economics. J. Norman Jensen. An investigation of types of reinforced concrete columns, reaching the conclusion that cement is the best reinforcement. 3500 w. Eng News—June 6, 1912. No. 33490.

The Bending Resistance of Built-Up Columns (Ueber den Knickwiderstand gegliederter Stäbe). R. Saliger. Treating on the bending moments of various built-up sections. Ills. Serial. 1st part. 2600 w. Zeit d Oest Ing u Arch Ver—Jan 5, 1912. No. 30536 D.

Concrete

Alkali as a Source of Danger to Concrete Dams. E. Tappan Tannatt. A letter stating investigations on the subject of disintegration in alkali regions. Ills. 5000 w. Engineering Record—Dec. 2, 1911. No. 29225.

Precautions to be Taken Before Concreting, and Concreting in Freezing Weather. Jerome Cochran. 5000 w. Cornell Civ Engr—Jan., 1912. No. 30039 C.

Cold Weather Concrete Work. John S. Nicholl. Illustrated account of successful work, stating necessary precautions. 2000 w. Cement Age—Feb., 1912. No. 30760 C.

Fabrication and Erection of Forms and Centers. Jerome Cochran. Treats of the fabrication and erection of forms based on current practice in concrete work. 6500 w. Cornell Civ Engr—May, 1912. No. 33197 C.

Commercial Designing of Concrete Buildings. Editorial discussion of the real cause of most failures of this material. 2000 w. Eng News—Jan. 11, 1912. No. 29538.

Concrete Construction. E. Brown. Abstract of paper read before the Montreal Bldrs. Exchange. Discusses the properties and the variations due to mixing and the desirability of a working standard. 2000 w. Can Engr—Feb. 1, 1912. No. 30247.

A Discussion of the Economics of Practical Concrete Construction. DeWitt V. Moore. Read before the Indiana Engng. Soc. A study of methods of concrete construction with particular regard for costs. 4500 w. Engng & Con—Feb. 14, 1912. No. 30423.

Practical Concrete Construction—Arriving at Cost Figures. De Witt V. Moore. A study, with particular regard for costs and efficient methods of construction. 5000 w. Cement & Engng News—April, 1912. No. 31957.

An English Proposed System of Forms for Building Construction. H. Kempton Dyson. Abstract of a paper in *Concrete and Construction Engng.* Illustrates and describes the design. 3000 w. Engng & Con—Feb. 28, 1912. No. 30859.

Proposed Rules for the Measurement of Concrete Construction. A committee report before the Nat. Assn. of Cement Users. 2000 w. Eng News—March 28, 1912. No. 31628.

Finishing Concrete Surfaces. Jerome Cochran. Gives suggested methods for treatment. 7500 w. Cornell Civ Engr—March, 1912. No. 31593 C.

Methods of Patching and Repairing Concrete. Conclusions drawn from an investigation of current practice made by a committee of the Am. Ry. Engng. Assn. 1200 w. Eng Rec—March 30, 1912. No. 31657.

Concrete Construction Costs in Cuba. Henry A. Young. Gives detailed costs for the excavation and concrete work for a double-tank, concrete-steel reservoir costing $106,000. Ills. 3000 w. Eng Rec—Sept. 21, 1912. No. 36058.

Concrete Work on the Fourth Avenue Subway. Samuel M. Purdy. Describes briefly the principal features of the concrete work incidental to the construction. 4000 w. Cornell Civ Engr—March, 1912. No. 31591 C.

Applications of Concrete to Underground Work. H. T. Mercer. Read before the L. Superior Min. Inst. Illustrates examples. 1000 w. Min & Engng Wld—Oct. 26, 1912. No. 37047.

A City of Poured Houses. Illustrated description of the new system of building invented by Milton Dana Morrill, and used extensively at Nanticoke, Pa. 800 w. Sci Am Sup—April 27, 1912. No. 32336.

Pre-Cast Concrete Residence Construction. Brief illustrated description of a residence at Woodmere (L. I.), N. Y. 900 w. Cement Age—May, 1912. No. 33097 C.

Pre-Cast Units in Economic Construction. Illustrates and describes examples of this construction. 1800 w. Cement Age—May, 1912. No. 33096 C.

Steel Forms and the Poured Concrete House. William Mayo Venable. Analysis of the advantages of steel over wood for this use. 2000 w. Cement Age—May, 1912. No. 33098 C.

Unit Wall Concrete Building Construction, Fort Crockett, Texas. R. C. Hardenau. Illustrated description of the Aiken system of flat wall construction, explaining its advantages. 1500 w. Eng News—June 27, 1912. No. 34109.

Methods and Plant Employed for Mixing and Placing Concrete for Floors, Rand McNally Building, Chicago. Brief description. 1200 w. Engng & Con—April 3, 1912. No. 31793.

Deering Works. W. D. Price. Illustrated description of a new concrete factory building for the International Harvester Co. 1200 w. Cement & Engng News—June, 1912. No. 33762.

See also Concrete, under *Bridges;* Buildings, Columns, Contracts, Factories, Foundations, Gasholders, Lavatories, Warehouses, and Waterproofing, under *Construction;* Concrete, under *Materials of Construction;* Concrete, under *Roads and Pavements;* Tanks, under *Water Supply,* and Subways. under STREET AND ELECTRIC RAILWAYS.

Concrete Mixers

An Economical Concrete Plant. Edward Cunningham. Illustrates and describes a concrete mixing plant used for the construction of a bridge in Philadelphia, Pa. 1400 w. Eng Rec—Jan. 6, 1912. No. 29410.

Concrete Mixing (Das Mischen des Betons). M. Marcichowski. Discusses the art of mixing, proper proportions for various work, etc. Serial. 1st part. 1600 w. Beton u Eisen—Dec. 14, 1911. No. 29729 E.

Concrete Poles

A New Process of Making Concrete Poles. Illustrated description of the concrete pole machine and plant invented by R. M. Jones. 1200 w. Eng Rec—July 13, 1912. No. 34433.

Concrete Fence Posts. L. J. Hotchkiss. Read before the Nat. Assn. of Cement Users. Reports experience with posts used by the C., B. & Q. Railroad. Ill. 1500 w. Can Engr—May 2, 1912. No. 32629.

Concrete Fence Posts on the Burlington Lines. Notes from a paper by H. L. Hotchkiss, describing the reinforced concrete fence posts used. Ills. 1500 w. Eng Rec—June 22, 1912. No. 33880.

Concrete Repairing

Methods of Patching and Repairing Plain and Reinforced Concrete. Abstract of the report of the Committee on Masonry of the Am. Ry. Engng. Assn. 3500 w. Eng News—April 25, 1912. No. 32368.

Concrete Slabs

Diagrams for the Design of Forms for Concrete Slabs. R. C. Yeoman. From *The Engng. Annual* of Valparaiso Univ. A discussion of the requirements, presenting diagrams and illustrating their use by examples. 1800 w. Eng News—Nov. 23, 1911. No. 28234.

Conduits

A Reinforced Concrete Conduit in Kortezwaag, Holland (Eisenbetondurchlass in Kortezwaag, Niederlande). R. Hoffmann. Describes arched design, and gives mathematical discussion of pressures. 2700 w. Beton u Eisen—Dec. 14, 1911. No. 29727 E.

Construction Camps

Camp Sanitation. R. C. Hardman. Discusses details for the protection of health in construction and other camps. Ills. 2200 w. Eng News—Oct. 17, 1912. No. 36895.

Sanitary Regulations Governing Construction Camps. Jerome Cochran. Discusses the sanitary conditions to be maintained to protect health when construction camps are necessary. 4000 w. Cornell Civ Engr—Feb., 1912. No. 30874 C.

The Sanitation of Contractors' Camps and the Patrol of Watersheds. A. J. Provost, Jr. Describes the sanitary work carried out by the contractors of the N. Y. City water supply; William W. Locke reports concerning Wachusett reservoir, in the Metropolitan water supply of Boston; and H. G. Payrow refers briefly to the Morris Dam, Waterbury, Conn. Ills. 4500 w. Jour Assn of Engng Ins—March, 1912. No. 31784 C.

Discussion of Paper, "The Sanitation of Contractors' Camps and the Patrol of Watersheds." Discussion of papers describing the sanitary work at various places. 3500 w. Jour Assn of Engng Socs—June, 1912. No. 34618 C.

Construction Work

Maintaining Construction Equipment. C. A. Tupper. Illustrates and describes field shops for the maintenance of the equipment employed in construction work. 3000 w. Am Mech—Aug. 1, 1912. No. 34997.

Contracts

Interpretation of Documents Composing Engineering Contracts. Jerome Cochran. Considers seriatim the essential documents to a complete engineering contract. 7500 w. Cornell Civ Engr—April, 1912. No. 32187 C.

Instructions to Bidders on Contracts. Jerome Cochran. Presents a standard for checking up the completeness of general clauses. 13000 w. Eng News—March 7, 1912. No. 31079.

The Relations of Engineers and Contractors. Address by Capt. D. L. Hough before the first Am. Road Cong. at Richmond, Va. Discusses some of the conditions which impose hardships. 7500 w. Eng Rec—Dec. 2, 1911. No. 28520.

The Relation of the Contractor to the Public Official. C. A. Crane. Read at the Am. Road Cong. A discussion of contract abuses and practice. 2500 w. Eng News—Oct. 17, 1912. No. 36894.

Competition in Public Contracts. Cassius E. Gillette. Suggests principles that should be made law to prevent contract graft. Also discussions. 30000 w. Jour Am Soc of Engng & Con—Feb., 1912. No. 31653 C.

Clauses as to Concrete and Ferro-Concrete. Editorial discussion of the need of special attention to these clauses in contracts. 2500 w. Engng—Feb. 23, 1912. No. 31039 A.

Conveyers

See same heading, under MECHANICAL ENGINEERING, *Transporting and Conveying.*

Cost Keeping

Contractors' Cost-Keeping and Organization. Richard L. Russell. Deals with the organization and records of Charles Cranford, giving blanks used and explaining the system. General discussion. 3500 w. Pro Brooklyn Engrs' Club, Paper 97—Jan., 1911. No. 28983 N.

Costs

Comparative Cost of Buildings of Wood, Concrete, and Steel Framing. Henry Grattan Tyrrell. A digest of comparative construction costs from many examples. First of three articles, deals especially with concrete buildings. Ills. 2500 w. Engineering Magazine—June, 1912. No. 33128 B.

Comparison of Plant and Operating Cost of Day Labor and Contract Work in the U. S. Improvement of the Upper Mississippi River. Charles W. Durham. Outlines the work and compares the U. S. labor plants and operating costs with those of the best contractors. Ills. 2000 w. Engng & Con—Jan. 24, 1912. No. 30098.

Foundation and Sewer Work—Costs and Comments. Victor Windett. Presents methods of cost-keeping and results obtained by their use. Discussion. Ills. 10800 w. Jour W Soc of Engrs—Nov., 1911. No. 29067 D.

In What Manner Are the Costs of Projects and Estimates to Be Defrayed (In welchen Fällen sind Projectarbeiten und Kostenanschläge zu bezahlen)? W. Beck. Treating of the costs of engineering service and estimates. Serial. 1st part. 2800 w. Elektrotech Rundschau—Jan. 4, 1912. No. 30529 D.

See also Labor, under *Construction.*

Crushers

Rock Crushing Plant, Kensico Dam. Samuel W. Traylor. Illustrated description of a very large stone-crushing plant, with a maximum capacity estimated at 500 cu. yds. per hour. 2200 w. Eng News—Feb. 22, 1912. No. 30719.

Rock Crushing Plant, Kensico Dam. Samuel W. Traylor. Illustrated description of this crushing plant to prepare stone for this dam being built in connection with the new water supply for New York City. 2200 w. Cement & Engng News—May, 1912. No. 32858.

Crushing Plant for the Constructior of the Kensico Dam. Samuel W. Taylor. A 500 cu. yd. per hour plant for a dam containing 1,000,000 cu. yds. of masonry. Ills. 2500 w. Engng & Con—Aug. 28, 1912. No. 35611.

Gravel Washing and Crushing Plant. Illustrated description of a plant near Cincinnati on the N. & W. R. R., consisting of concrete buildings equipped with electric power, and elevated machinery delivery by gravity to storage bins. 2000 w. Eng Rec—Oct. 12, 1912. No. 36781.

See also same heading, under MINING AND METALLURGY, *Ore Dressing and Concentration.*

Demolition

Demolition by Explosives at Port Talbot. Illustrated account of methods used in removing heavy and deep concrete foundations and a huge accumulator tower of brickwork in best grouted cement. 1000 w. Engr, Lond — June 7, 1912. No. 33798 A.

Drainage

Plans for and Estimates of Costs of Draining 33000 Acres of Swamp Land in North Carolina. Map and plan of the ditch system for draining Back and Jacob's swamps. 2500 w. Engng & Con—May 15, 1912. No. 32912.

The Little River Drainage—A Project for Reclaiming 500,000 Acres of Swamp Land in Missouri. Map and description of a plan for reclaiming, by flood control and drainage, these swamp lands along the river. 1700 w. Engng & Con—May 8, 1912. No. 32658.

See also same heading, under *Waterways and Harbors;* also under RAILWAY ENGINEERING, *Permanent Way and Buildings.*

Drilling

Special Deep-Hole Drills and Work on the Barge Canal. Lucius I. Wightman. Illustrated description of the "autotraction drills," and method of operation. 2000 w. Compressed Air—Nov., 1911. No. 28279.

A Cost and Time Study of Drilling Blast Holes with Well Drills. From a paper by R. R. Sanderson, read at meeting of the Natural Lime Mfrs. Assn. 5000 w. Engng & Con—June 5, 1912. No. 33481.

See also same heading, under MINING AND METALLURGY, *Mining.*

Earth Pressures

Notes and Experiments on Earth Pressures. James C. Meem. Describes experiments made and conclusions reached. 6000 w. Pro Engrs' Club of Phila—April, 1912. No. 33118 D.

Earthquake Construction

Seismic Construction (Le costruzioni asismichi). M. Viscardini. Discussion on the several theories of construction against earthquakes. Diagrams. Serial. 1st part. 2500 w. Il Cemento—Mar. 30, 1912. No. 32308 D.

Earthwork

American Earthwork Machinery. Illustrates and describes various machines and appliances, and the methods of operation. 4500 w. Engr, Lond—Aug. 9, 1912. Serial. 1st part. No. 35308 A.

Electric Power

Electric Power in Building the World's Greatest Aqueduct. J. M. Matthews. Shows that electric power has been almost indispensable in the construction of the Catskill Aqueduct and the Panama Canal. Ills. 4000 w. Gen Elec Rev—April, 1912. Serial. 1st part. No. 31865 C.

Electricity in Stone Quarries and Gravel Pits. Illustrated description and information concerning plants near Chicago. 4500 w. Elec Rev & W Elect'n—March 30, 1912. No. 31686.

Electricity in Building Construction. Illustrates and describes electrically driven machines for this work, explaining their advantages. 5500 w. Elec Rev & W Elect'n—March 2, 1912. No. 30978.

See also Excavators, under *Construction.*

Electrolysis

Electrolysis Investigation and Ordinance at Chicago. Information concerning tests on the Mandel Building and the proposed ordinance to prevent damage by electrolysis. 2000 w. Eng News—June 6, 1912. No. 33491.

See also Corrosion, under ELECTRICAL ENGINEERING, *Electro-Chemistry.*

Embankments

See same heading, under RAILWAY ENGINEERING, *Permanent Way and Buildings.*

Estimates

The Use of Charts in the Preparation of Estimates. Edward G. Fiegehen. The methods advocated are applied to the preparation of estimates for electric crane work, but can also be applied to other work. 2500 w. Engng—June 14, 1912. No. 33937 A.

Method of Making Rapid Cost Estimates for Crib Pier and Breakwater Construction. Gives the method developed and described by G. A. M. Liljencrantz. Ills. 1500 w. Engng & Con—June 5, 1912. No. 33479.

Prime Costing and Estimating. G. James Wells. Considers the aim, and when it is justified, and discusses system. 5000 w. Manchester Assn of Engrs—March 9, 1912. No. 31523 N.

Excavation

Hydraulic Excavation Methods in Seattle. R. M. Overstreet. Illustrates and describes features of the Jackson St. regrade work. 2500 w. Eng Rec—May 4, 1912. No. 32581.

Trench Excavation by Steam Shovel. Illustrates and describes machine and methods used for sewer work on Staten Island. 1800 w. Munic Jour & Engr—Jan. 4, 1912. No. 29385.

Method of Solidifying Chambered and Fissured Rock for Excavation for Power House and Dam Foundation. C. H. Tisdale. (Abstract.) Describes grouting operations to secure solid foundations at Hales Bar, Tennessee River. Ills. 2000 w. Engng & Con—Jan. 24, 1912. No. 30097.

Motor Trucks for Hauling Blasted Rock from City Aqueduct Tunnel, New York. Illustrates and describes methods adopted for the hauling of over a million yards of rock from a big city. 1200 w. Eng Rec—March 30, 1912. No. 31659.

See also Rock Removal, under *Waterways and Harbors.*

Excavation Costs

The Cost of Rock Excavation in Open Cutting. Deals with the cost of excavating rock in open cutting, or excavating rock for crushing, road-making, etc. 3500 w. Engr, Lond — April 26, 1912. Serial. 1st part. No. 32848. A.

Excavators

Electricity in Excavation Work. W. C. Lancaster. Describes and illustrates installations where the electric motor has been used, and explains its application to excavation work. 3000 w. Gen Elec Rev —March, 1912. No. 30764 C.

Electric Power in the Construction of the Vistula Canal (Elektrischer Antrieb der Baumaschinen bei der Kanalisation der Weichsel). J. Weingrün. Giving the kinds of machines in use and mode of obtaining power. Ills. 2800 w. Elek u Masch—Jan. 21, 1912. No. 30524 D.

Electric Excavators (Der Arbeitsverbrauch des elektrischen Trockenbaggers). P. Sanio. Treats on electric motive apparatus for excavators. 2300 w. Elek Kraft u Bahnen—Jan. 24, 1912. No. 30584 D.

Expansive Forces

Forces of Expansion and Contraction. Edward Ingham. Shows how these factors are provided for in design. 2000 w. Power—March 12, 1912. No. 31120.

Factories

Preliminary Problems in the Design of Manufacturing Buildings. E. H. Darling. Briefly considers slow-burning, fire-proof, and steel-frame constructions, and the problems of utility, location and finance. 5500 w. Ap Sci—Nov., 1911. No. 28273 C.

The Construction of Manufacturing Buildings. Oscar E. Perrigo. Discusses problems to be considered in their erection. 3000 w. Ir Trd Rev—Jan. 18, 1912. No. 29693.

Example of Concrete Factory Buildings. Illustrates and describes details of construction and design of the modern utilization of poured concrete in connection with light steel rods. 1000 w. Ir Age—May 25, 1912. No. 33056 C.

See also Floors, under *Construction.*

Failures

A Partial Collapse of a Boston Building. Illustrated description of the building and cause of the failure, with editorial comment. 3000 w. Eng Rec—Nov. 18, 1911. No. 28091.

The Failure of the Spang-Chalfant Reinforced-Concrete Building. Pittsburg, Penn. Illustrated account of this failure on Feb. 19, 1912, at Etna. a suburb of Pittsburg. 1800 w. Eng News—Feb. 29, 1912. No. 30943.

The Collapse of the Porter Avenue Pumping Station at Buffalo; A Resume. Concerning the report of the Commission in regard to this disaster which occurred June 30, 1911. Ills. 1500 w. Eng News—Aug. 1, 1912. No. 35048.

Failures in Building Construction and Their Lessons. Edward Godfrey. First of a series of articles aiming to gather from failures the lessons useful to the designer and architect. 2500 w. Archt & Bldg—July, 1912. Serial. 1st part. No. 34916 C.

The Collapse of the Reinforced-Concrete Building for the Prest-O-Lite Co. Under Construction at Indianapolis, Ind. Theodore L. Condron. Gives an account of the failure, describing the building and the concrete work, and explaining the cause of failure. Ills. 3000 w. Eng News—Dec. 28, 1911. Serial. 1st part. No. 29175.

The Collapse of the Neilson Building. Illustrated account of a failure in Toronto of a factory building having three stories added. 3500 w. Can Engr—June 20, 1912. No. 33906.

Fire-Extinction

Fire Extinction by Frothy Mixtures. Editorial review of the system now popularly known as the Perkeo-Salzkotten and Bartels-Harburg system. 1600 w. Engng—Jan. 12, 1912. No. 29909 A.

Fireplaces

Fireplace Designed for Heating Purposes. Illustrates and describes details of construction intended to throw heat out into the room. 900 w. Met Work—April 12, 1912. No. 31919.

Fireproof

Fires and Fire Prevention. T. M. Prudden. Discusses the construction of fireproof buildings. Ills. 2000 w. Yale Sci M—Jan., 1912. No. 30034 C.

Fireproof Residence Construction. E. S. Child. Information concerning an attractive fireproof residence under construction at Dalton, Mass., with data of cost. Ills. 1000 w. Cement Age—Jan., 1912. No. 30016 C.

Inside Story of Equitable Building Fire. Illustrations and description of what was seen in a brief survey after the fire. 1500 w. Ins Engng—Feb., 1912. No. 31434 C.

The Equitable Life Building Fire. An illustrated account of this fire and the conditions that interfered with its control, with the preliminary report of the N. Y. Board of Fire Underwriters. 2500 w. Ins Engng—Jan., 1912. No. 30907 C.

The Enormous Fire Waste of the United States. John L. Cochrane. Discusses bad construction as a cause of fire loss. Ills. 3000 w. Sci Am—June 15, 1912. No. 33716.

All Metal Construction of Doors and Trim for Fireproof Buildings, Etc. William J. Grinden. Illustrates and describes the hollow metal construction. Discussion. 4500 w. Pro Brooklyn Engrs' Club—Jan., 1912. No. 35489 N.

The Planning of Fireproof Apartment Houses in New York. H. W. Frohne. Illustrates and describes recent designs. 2500 w. Am Archt—Nov. 29, 1911. No. 28617 D.

See also Roofs, under *Construction*, and Fireproof Tiling, under *Materials of Construction.*

Fire Protection

Practical Fire Prevention. Edward F. Croker. Presents the fundamental principles of an effective service. 2500 w. Engineering Magazine—June, 1912. No. 33129 B.

Principles of Fire-Resisting Construction for Industrial Plants. F. P. Walthers. With introduction by Ira H. Woolson on "The Elements of Factory Fire Protection." First article of a series on the construction and arrangement of buildings and a study of the fire hazard. Ills. 5800 w. Engineering Magazine—Aug., 1912. No. 34757 B.

Principles of Fire Resisting Construction for Industrial Plants. F. P. Walther. Discusses fireproof construction and structural materials. Ills. 4500 w. Engineering Magazine—Sept., 1912. No. 35449 B.

Automatic Sprinkler Protection for Industrial Plants. F. P. Walther. The present number discusses the essentials of efficiency in the construction and operation of automatic sprinklers. Ills. 3500 w. Engineering Magazine—Oct., 1912. No. 36292 B.

Fire Prevention and Public Safety. Rudolph P. Miller. A brief of the New York State Factory Investigating Commission. Arguments applying more especially to the city of New York and conditions found there. 8500 w. Ins Engng—Feb., 1912. No. 31435 C.

Concrete Water Barrels for Trestle Protection. Hunter McDonald. Read before the Engng. Assn. of the South. Discusses the essentials necessary to secure efficient service. Ills. 1200 w. Eng Rec—March 2, 1912. No. 30985.

Fire Protection for a Carhouse and Storage Yard. Illustrated description of a system in Minneapolis, Minn., using single and double nozzle towers with independent water supply. 600 w. Elec Ry Jour—Sept. 21, 1912. No. 36229.

See also Fire Systems, under *Water Supply.*

Floors

Floors and Floor Construction for Manufacturing Plants. Henry Grattan Tyrrell. This first of two papers considers materials and types suited to ground levels of factories and shops. Ills. 5000 w. Engineering Magazine—July, 1912. No. 33968 B.

Floors and Floor Construction for Manufacturing Plants. Henry Grattan Tyrrell. Second of two papers. Deals with upper floors of factories and shops. Ills. 3500 w. Engineering Magazine—Aug., 1912. No. 34756 B.

Experimental Study of Stresses in Flat Slabs. Frank J. Trelease. From a paper before the Nat. Assn. of Cement Users. Describes experiments. Ills. 2000 w. Eng Rec—March 30, 1912. No. 31663.

Stress Measurement of a Loaded Tile-Concrete Floor Slab. From a paper by Frank J. Trelease, read before the Nat. Assn of Cement Users. Explains method of testing and gives results. 1500 w. Eng Rec—April 20, 1912. No. 32195.

A Study of Floor Framing (Untersuchung eines Stockwerkrahmens). Hans Leitner. Mathematical investigations on the subject of wall stresses in reinforced concrete floors. Diagrams. 3200 w. Beton u Eisen—Sept. 13, 1912. No. 36613 E.

A New Type of Flooring (Die un nuovo tipo di solaio). Eug. Carini. Description of a reinforced tile arch for fireproof construction in floors and roofs. Ills. 2500 w. Il Cemento—Mar. 15, 1912. No. 32307 D.

Difficult Floor Renewal in a Tannery. Describes work in Newark, N. J., including the driving 25-foot piles where the headway was limited to 16 feet. 1200 w. Eng Rec—March 23, 1912. No. 31485.

See also same heading under *Bridges;* Reinforced Concrete Slabs and Timber, under *Materials of Construction.*

Foundations

Using Steel Foundation Piles and Girders in Very Narrow Clearance. Explains how wall columns are carried close to the lot line on special girders, supported by piles sunk between encroaching footings. Ills. 1500 w. Eng Rec—Dec. 16, 1911. No. 28992.

Driving Steel Piles Near Insecure Foundations. Describes work in constructing foundations for a 12-story building in New York City, and underpinning of the adjacent 12-story building. 1000 w. Eng Rec—Sept. 7, 1912. No. 35808.

Modern Testing of Foundations for Engineering Structures. Wallace T. Roberts. Describes methods and apparatus employed in modern prospecting. Ills. 3000 w. Jour Worcester Poly Inst—May, 1912. No. 33036 C.

Detailed Methods Employed in Sinking and Converting Caisson Foundations in Chicago. Chester B. Lewis. Notes, based on personal experience, giving an account of the method developed for supporting the concentrated column and wall loads of high buildings. 4500 w. Engng & Con—Jan. 10, 1912. No. 29521.

Pneumatic Caisson Foundations for Tall Buildings. Alex. Allaire. Illustrated detailed description of pneumatic caisson work for carrying the piers of buildings to rock. 4000 w. Can Soc of Civ Engrs—Dec. 7, 1911. No. 31293 N.

The Large Pneumatic Foundations of the New York Telephone Building. Illustrates and describes the underpinning of large pneumatic caisson concrete piers with footings in sand and gravel. 2200 w. Eng Rec—June 1, 1912. No. 33296.

Pneumatic Caisson Foundations of the Adams Express Building, New York. Illustrated description of the plant, equipment and methods used in constructing foundations through quicksand, gravel and hard pan to rock at a maximum depth of 70 feet for a 32-story building. 2000 w. Eng Rec—Sept. 21, 1912. No. 36056.

Constructing the Foundations of the Seamen's Church Institute, New York. Describes the foundations of a 12-story structure carried about 40 feet below the street. Pneumatic wall caissons were sunk through mud, clay, sand, and hard-pan, bonded together and braced across the lot. Ills. 3000 w. Eng Rec—Jan. 27, 1912. No. 30071.

The Concrete Substructure of the Seaman's Church Institute. Describes the character of the soil and the methods of meeting the difficulties in constructing a building in New York City. Ills. 1500 w. Eng Rec—Dec. 23, 1911. No. 29139.

The Foundation Work for the Woolworth Building at New York City. Charles S. Rindsfoos. Brief illustrated description of the foundations constructed for a building that will rise 769 feet above the curb. 2000 w. Cornell Civ Engr—Jan., 1912. No. 30036 C.

The Steel Substructure of the Woolworth Building in New York City. Illustrates and describes the massive foundation girders and grillages for this building, providing for an estimated weight of about 125,000 tons. 1500 w. Eng Rec—Feb. 17, 1912. No. 30466.

The Method of Excavating the Cellar of the Woolworth Building in New York. Illustrates and describes methods used in excavating to an average depth of 115 ft. below the curb in the foundation work of a 55-story building. 1500 w. Eng Rec—April 27, 1912. No. 32394.

Substructure of the Guaranty Trust Building, New York. Brief account of pneumatic caisson foundations carried through quicksand to a depth of 60 to 90 ft. below the curb. 1800 w. Eng Rec—April 20, 1912. No. 32199.

Constructing the Foundations of Tall Warehouse Buildings. Illustrated description of construction work in Brooklyn, N. Y. 1500 w. Eng Rec—July 6, 1912. No. 34281.

The Foundations of the Firemen's Insurance Building in Newark. Describes excavation through quaking sand and a subterranean stream, where several kinds of steel sheet piles were used. 2000 w. Eng Rec—Nov. 25, 1911. No. 28294.

Foundations of the Kinney Building, Newark, N. J. Describes details of difficult excavation and safeguarding of adjacent structures. 2000 w. Eng Rec—Oct. 19, 1912. No. 36905.

An Inverted-Arch Foundation of Reinforced Concrete. James E. Payne. Illustrates and describes foundations of unusual type used for a warehouse in New York City. 1000 w. Eng News—Dec. 28, 1911. No. 29171.

Deep Open Excavation in Quicksand. Brief description of difficult foundation work in New York City. Ills. 1000 w. Eng Rec—Dec. 30, 1911. No. 29233.

The Zinn Building. T. Kennard Thomson. A building in N. Y. City, having foundations in made ground over river silt, and local conditions adding to the difficulties. 1500 w. Can Engr—Feb. 22, 1912. No. 30727.

Chicago Building Foundations. A. M. Wolf. Describes the character of the soil and the various types of foundations used, discussing their disadvantages, which led to the use of caissons. Ills. 3500 w. Wis Engr—Jan., 1912. No. 30044 C.

Foundation Work in Montreal. Alexander Allaire. Illustrates and describes the recognized types used, also the character of the soil. 1800 w. Can Engr—Jan. 18, 1912. No. 29862.

The Substructure of the New Daniels & Fisher Stores at Denver. Reinforced-concrete footings are employed and there are unusual examples of cantilever supports for some of the columns. Ills. 1500 w. Eng Rec—Feb. 10, 1912. No. 30347.

Heavy Power-House Foundations. Illustrated description of the main features of foundations for the Pendleton station of the Cincinnati Traction Co. 1200 w. Eng Rec—March 2, 1912. No. 30986.

Substructure of the Union Central Life Insurance Building, Cincinnati. Illustrated description of grillage foundations on sand for an 18-story building with 32-story tower. 900 w. Eng Rec—Sept. 21, 1912. No. 36059.

Excavating Caissons Hydraulically at St. Louis. Illustrated description of interesting foundation work for the Railway Exchange building. 1200 w. Eng Rec—Sept. 7, 1912. No. 35807.

Concrete Column Foundation for a Building Over Coal Mine Workings. Describes an unusual foundation used in constructing a high-class residence in Pittsburg over old coal mines. Ills. 800 w. Eng News—April 4, 1912. No. 31800.

Constructing a Concrete Pile Foundation. Illustrates and describes foundations constructed for a warehouse in Pittsburgh. 900 w. Eng News—May 2, 1912. No. 32567.

Cylinder Foundation in Ferro-Concrete. Illustrated description of the building and sinking of a large ferro-concrete caisson. 800 w. Engng—Feb. 23, 1912. No. 31035 A.

The Use of Concrete for Machine Foundations (Anwendung von Beton zu Maschinenfundamenten). The advantages obtained by these solid block foundations in place of masonry. Ills. 2400 w. Zeitschr des Ver deutscher Ing—Sept. 21, 1912. No. 36630 D.

Embankments and Foundations — Toronto-Sudbury Branch C. P. R. A. C. Oxley. Describes the construction of this line. 2200 w. Can Soc of Civ Engrs—May, 1912. No. 33178 N.

A Novel Gas-Holder Foundation. Hunley Abbott. Describes the use of the bulged-bottom "pedestal" concrete piles in the foundation of a large gas-holder at New Haven, Conn. Ills. 2000 w. Eng News—Jan. 4, 1912. No. 29386.

Method of Constructing Gas Holder Foundations in Soft Soils With Some Costs. Principally a description of the foundations of the gas holder of the New Haven Gas Lgt. Co. Ills. 1500 w. Engng & Con—Feb. 21, 1912. No. 30712.

Gasholder Foundations in Soft Soils. Hunlay Abbott. Illustrated detailed description of work at New Haven, Conn. 2200 w. Am Gas Lgt Jour—Jan. 29, 1912. No. 30072.

A Heavily Reinforced Concrete Foundation for a Power Station. Illustrated description of work at Terre Haute, Ind. 1200 w. Eng Rec—July 13, 1912. No. 34434.

Construction of Machinery Foundations. Arthur Connley. Describes concrete foundations and other types for both large and small machines, including heavy steel works steam engines. Ills. 2500 w. Ir Age—July 4, 1912. No. 34247 C.

See also Caissons, and Gasholders, under *Construction.*

Foundries

The Design and Erection of a Large Foundry Building. Merrill Hibbard. Illustrates and describes a structure of saw-tooth design with concrete roofing slabs, erected in 105 working days. 3500 w. Eng Rec—Dec. 23, 1911. No. 29142.

Gasholders

The Design of Gasholder Tanks. George Evetts. From a paper read before the Jun. Inst. of Engrs., London. Deals with the design and construction of modern types. 1800 w. Eng News—Nov. 30, 1911. No. 28531.

The Guide Framing of a Gas-Holder. E. F. Miller. Reviews the development of this structure, and considers the calculation of loads and stresses. 6000 w. Eng News—Nov. 30, 1911. No. 28530.

Constructing the Foundations for a Large Gasholder. Describes work in the Borough of the Bronx, New York City. 2200 w. Eng Rec—Dec. 23, 1911. No. 29147.

Engineering Features of a Large Gas-Holder. Herbert W. Alrich. Illustrates and describes the design and construction of a 10,000,000 cu. ft. holder at New York. 6500 w. Eng Rec—April 27, 1912. No. 32386.

The Suitability of Concrete for Gas-holder Tanks. Herbert W. Alrich. Describes the mechanical features of gasholders and discusses requirements in America. Enumerates the disadvantages of concrete over steel. 3500 w. Am. Gas Lgt Jour—April 29, 1912. No. 32433.

See also Foundations, under *Construction.*

Girders

Influence-Diagrams for Continuous Girders. Frederick Charles Lea. Aims to show how an influence-diagram can be drawn for any section of a continuous girder to give the shearing force and bending moment produced by any external loading. 6300 w. Inst of Civ Engrs—No. 3921. No. 29962 N.

Grading

The Engineer's Work in Grading Landscape Areas. John N. Ambler. Considers problems in landscape gardening. 3000 w. Eng News—Dec. 7, 1911. No. 28644.

Grain Elevators

New Grain Elevator for the Montreal Harbor Commissioners. Illustrates and describes the design and construction of a concrete structure equipped with unusual shipping facilities. 2500 w. Eng Rec—Oct. 5, 1912. No. 36549.

See also Dock Machinery, under *Waterways and Harbors.*

Hospitals

Notes on Hospital Planning. S. S. Goldwater. First of a series of articles discussing rules that govern hospital construction in various places. Also illustrated descriptions of hospital buildings. 3500 w. Br Build—July, 1912. Serial. 1st part. No. 34987 D.

Construction of Isolation Hospitals. Report of the Local Government Board into the cost of construction. 5000 w. Surveyor—Sept. 13, 1912. No. 36253 A.

The Small Infirmary (Das kleine Krankhaus). Max Setz. Notes on the advisability of constructing small hospitals of fifty beds or under, and details on ideal designs for such. Ills. Serial. 1st part. 4400 w. Zeit d Oest Ing und Arch Vereines—Mar. 8, 1912. No. 32052 D.

Hospital Construction to Meet Medical Requirements (Anforderungen an Krankhausbauten in ärztlich-administrativer Beziehung). Dr. E. Hofmokl. Presents the various requirements to be met. 4000 w. Zeit d Oest Ing u Arch Ver—Dec. 15, 1911. No. 29751 D.

The Erection of the Imperial General Hospitals (Die Neubauten des k. k. Allgemeinen Krankhauses). B. Piekniczek. Plans and description of building having twenty-three separate wards for treatment of medical and surgical cases. Serial. 1st part. 2400 w. Zeit d Oest Ing u Arch Ver—Jan. 5, 1912. No. 30535 D.

The University Women's Clinic of the New Imperial General Hospital in Vienna (Die Universitäts - Frauenkliniken des neuen Wiener k. k. Allgemeinen Krankhauses). R. Jaksch. Details the construction of this new building. Ills. 4400 w. Zeit d Oest Ing u Arch Ver—Feb. 2, 1912. No. 30539 D.

Housing Plans

Model Housing Plans for the Philippines. George H. Guerdrum. Describes and illustrates plans designed to meet the requirements of sanitation. 1000 w. Eng News—Nov. 16, 1911. No. 28089.

Hydraulic Filling

Cost of 735,425 cu. yds. of Hydraulic Dredge Fill for the Extension of Lincoln Park, Chicago, Ill. Describes the work and gives itemized costs. Map. 900 w. Engng & Con—June 5, 1912. Serial. 1st part. No. 33480.

Inspection

A Method of Inspection of Construction Work and the Supervision of Inspection. Alden W. Welch. Outlines a system and offers suggestions. 1200 w. Engng & Con—Aug. 7, 1912. No. 35077.

Duties of an Inspector on Construction Work. Jerome Cochran. A general summary of an inspector's duties. 3500 w. Cornell Civ Engr—Oct., 1912. No. 37021 C.

Joints

Tests on the Strength of Nailed Joints. J. H. Thornley. Reports a nail test made in connection with the design of the Porcupine Power Co.'s hydro-electric plant at Sandy Falls, Ont. Ills. 2000 w. Ap Sci—Feb., 1912. No. 30884 C.

Strength of Glued Joints. L. V. Ludy. Reports a series of tests and results. 1000 w. Wis Engr—March, 1912. No. 31576 C.

Dovetailing and Gluing-Machine. Illustrated description of a machine used in joining wood so as to produce the strongest possible board with economy of labor. Especially used in making "Torroba" boxes but applicable to other work. 1000 w. Engng—Feb. 23, 1912. No. 31042 A.

Labor

The Cost of Labor in Connection with the Erection and Maintenance of Buildings. Abstract of a paper by R. M. Kearns read before the Surveyors' Inst. Suggestions for estimating the cost, based on British rates. 3500 w. Archt, Lond —April 19, 1912. No. 32510 A.

Laboratories

The Construction of Foundry Laboratories with Particular Reference to Ventilation (Ueber den Bau von Eisenhütten-laboratorien mit besonderer Berucksichtungen der Lüftungseinrichtungen). H. Kinder. Description of new laboratory at Duisburg-Meiderich. Ills. 1600 w. Stahl u Eisen—Dec. 14, 1911. No. 29702 D.

Lavatories

Concrete Construction in the Underground Public Lavatories in Charlottenburg (Betonkonstruktionen der unterirdischen Bedürfnisanstalten in Charlottenburg). Herr Zangemeister. Details of construction. Ills. 3300 w. Beton u Eisen —Feb. 26, 1912. No. 31351 E.

Loam Work

A Study in the Laying of Brick for Loam Work. Illustrated discussion of the advantages of hand or trowel, and the several steps taken in making of a wall to form a pulley face. 1500 w. Castings —Nov., 1911. No. 28142.

Methods

Some Unusual Construction Methods and Plants Employed on a Large Contract. Illustrates and describes work at South Bend, Ind. 1500 w. Engng & Con—Feb. 28, 1912. No. 30860.

Monuments

The Victor-Emmanuel II. Monument at Rome (Le Monument de Victor-Emanuel II., a Rome). Fr. Pollastri. Details in the construction and erection of this large monument. Ills. and Plate. 3000 w. Genie Civil—Mar. 16, 1912. No. 32097 D.

Piers

Rebuilding a Bridge Pier in a Cofferdam. Illustrated description of work at Pittsburgh, a long heavy span supported on falsework towers while grillage foundations were removed and new pile foundations built for the piers. 1200 w. Eng Rec—Sept. 7, 1912. No. 35811.

A Pier Built on Cylinders Cast as Concrete Shells and Filled in Place. H. L. Muchemore. Illustrated account of shells made on shore and sunk as open caissons at Puget Sound Navy Yard. 2500 w. Eng Rec—June 22, 1912. No. 33878.

Pile-Driving

Self-Propelled Pile Driving Plant. Illustrated description of a locomotive steam pile driving plant designed for the Argentine Ry. Co. 500 w. Engr, Lond—March 22, 1912. No. 31733 A.

The Problem of Pile Driving (Ein Beitrag zum Problem des Rammpfahls). Geiss. Studies on earth resistance in driving. 3300 w. Beton u Eisen—Dec. 14, 1911. No. 29726 E.

The Economic Drop of the Ram of the Dutch Pile-Driver (De nuttige valhoogte van het blok bij het heien met de Hollandsche heimachine). Y. M. D. Kentie. A mathematical discussion. Ills. 6000 w. De Ingenieur—Oct. 14, 1911. No. 28471 D.

Pile Resistance (Résistance des Pieux). M. J. Benahenq. Mathematical discussion on theory and application. Serial. 1st part. 38000 w. Ann des Ponts et Chaussées—Oct., 1911. No. 28496 E + F.

Piling

Specifications for Creosoting Piling. F. D. Beal. 2000 w. Ry & Engng Rev—Dec. 23, 1911. No. 28910.

Concrete Piles. Maxwell M. Upson. Abstract of a paper before the Am. Soc. of Engng. Conts. Describes the different methods used, discussing advantages and giving general information. Ills. 2500 w. Ry Age Gaz — July 12, 1912. No. 34424.

A New Method of Reinforced Pilings (Nouveau système de pieux armés). P. Baumont. Description of concrete pilings, with metal cores. Ills. 2000 w. Rev Industrielle—Nov. 18, 1911. No. 28851 D.

The Scantlings of Reinforced-Concrete Piles. Frank H. Jeffree. Considers the stages which a pile passes through before its use in required work and their influence on scantling. 1000 w. Engng—March 15, 1912. No. 31525 A.

Strauss Piling Foundations in Switzerland (Strausspfahlgründungen in der Schweiz). Herr Kersten. An account of some of the constructions built upon the Strauss patented knobby concrete pilings. Ills. 2800 w. Schweiz Bau—May 18, 1912. No. 33523 D.

Calculations on the Dimensions and Supporting Power of Pile Foundations (Calcul des dimensions et du pouvoir porteur des pieux de fondation). Ch. Dantin. Mathematical discussion. 6400 w. Génie Civil—Jan. 27, 1912. No. 30621 D.

Pisa Tower

General Description and Elevations of the Tower; Present Inclination Compared With Earlier Measurements (Descrizione generale e rilevamento del Campanile. Pendenza attuale in confronto di quella d'altri tempi). Francesco Bernieri. Comparison with the 1817 survey of the tower, showing slightly increased inclination. Drawings. 9000 w. Ann della Soc d Ing u Arch Ital—Aug. 1, 1912. No. 36211 E.

Underground Waters and Their Influence on the Stability of the Tower (Sul regime idrografico sotterraneo e sulle sue attinenze con la stabilità del Campanile). G. Cuppari. The results of such investigations. 2 plates. 14400 w. Ann della Soc d Ing u Arch Ital—Aug. 16, 1912. No. 36212 E.

Public Market

Toledo's Municipal Market. Sterling Beeson. Illustrated description of an unusually fine structure. 1500 w. Munic Jour—Aug. 8, 1912. No. 35087.

Reclamation

Engineering Achievements in Land Reclamation. Victor H. Powers. Illustrated account of how 188,000 acres are being redeemed at Fellsmere, Florida. 3000 w. Mfrs' Rec—April 11, 1912. No. 31947.

The Engineering Problems of Land Reclamation. A. M. Shaw. Divides lands requiring scientific treatment into four types, considering them briefly, and especially discussing lands requiring drainage. The paper is discussed by J. F. Coleman. Maps. 7000 w. Jour Assn of Engng Socs—Oct., 1911. No. 27673 C.

A Summary of the Engineering Features of and the Progress of Work on the U. S. Reclamation Service. 6000 w. Engng & Con—Nov. 8, 1911. No. 27787.

Tidal Marshes and Their Reclamation. George M. Warren. Illustrated account of investigations and study of the profitable reclamation of tidal marshes. 99 pages. U S Dept of Agri, Bul 240—Oct. 3, 1911. No. 32897 N.

Some Examples of Tidal Marsh Land Reclamation; Structures and Costs. First of a series of descriptions of specific works based on studies made by U. S. Government engineers. Ills. 1500 w. Engng & Con—Jan. 24, 1912. Serial. 1st part. No. 30100.

Some Examples of Tidal Marsh Land Reclamation; Structures and Cost. Map, sections and brief description of land in Cumberland Co., New Jersey. 1000 w. Engng & Con—July 10, 1912. No. 34415.

Wet Land Reclamation. Edward Wisner. A general survey of the work accomplished and future possibilities. 2000 w. Mfrs' Rec—Feb. 22, 1912. No. 30755 D.

Land Reclamation by Flood Protection; a Typical Problem and Its Solution. Describes the Neosho River drainage area in Kansas as an example of the conditions encountered and works required. Map. 5000 w. Engng & Con—Feb. 28, 1912. No. 30864.

Reclaiming of Minnesota's Swamp Lands: General Statement of Problem and of Progress of the Work. George A. Ralph. Ills. 5000 w. Engng & Con—Jan. 31, 1912. Serial. 1st part. No. 30147.

A Sandy Belt on the Madras Coast. Reginald Ryves. Illustrated description of the reclamation work, and its relation to Madras harbor works. 4500 w. Engr, Lond—Feb. 2, 1912. No. 30407 A.

See also Drainage, under *Construction*, and under *Waterways and Harbors*.

Reinforced Concrete

Field Testing and Inspection on Reinforced Concrete Building Contracts. Describes methods followed on the construction of several Brooklyn warehouses. 3500 w. Eng Rec—May 11, 1912. No. 32814.

Concrete Warehouse of Modified Flat Slab Design. Illustrated description of a structure at Pittsfield, Mass. 1500 w. Eng Rec—Oct. 19, 1912. No. 36904.

Precautions for Assuring Impermeability in Reinforced Concrete Structures (Precauzioni per assicurare la impermeabilità delle opere in cemento armato). L. Luiggi. Studies of various attempts to render concrete impervious, based on American and Italian experiments. Plate. 8100 w. Ann d Soc d Ing e d Arch Ital—Sept. 1, 1912. No. 36686 E.

Comparison of Seven Building Code Requirements for the Design of Reinforced Concrete. Jerome Cochran. A study of building code requirements. 3000 w. Cornell Civ Engr—Nov., 1911. No. 28331 C.

Demolishing a Reinforced-Concrete Grandstand with a Pile-Driver Ram. Cliff M. Stegner. Brief illustrated description of the work, with remarks on the construction and condition of the structure. 600 w. Eng News—Nov. 23, 1911. No. 28233.

Why Reinforced-Concrete Buildings Fail. C. A. P. Turner and J. Kahn. Editorial letters commenting on an article by Ernest McCullough. 6500 w. Eng News—Dec. 21, 1911. No. 29121.

The Collapse of a Reinforced Concrete Building in Indianapolis. An illustrated account, showing the necessity of supporting green concrete securely. 1000 w. Eng Rec—Dec. 16, 1911. No. 28990.

Fire in a Reinforced Concrete Pulp Mill. Morton C. Tuttle. Illustrated account of a fire at So. Windham, Me., describing the building and discussing the results of the fire. 1000 w. Eng News—July 11, 1912. No. 34409.

The Reinforced Concrete Industry at the International Hygiene Exhibition in Dresden (Die Eisenhotenindustrie auf der Internationalen Hygiene-Ansstellung Dresden, 1911). Brief description of reinforced concrete buildings at the exhibition. Ills. 1100 w. Beton u Eisen—Oct. 2, 1911. No. 28400 E.

Reinforced Concrete Structures at the Industrial and Agricultural Exposition, Koeslin, 1912 (Eisenbetonbauten auf der Gewerbe-, Industrie- und Landwirtschaftausstellung zu Köslin 1912). Herr Meyer. Describes the unsupported zizzag stairway, rising about 35 feet above the ground, arches, foundations, etc. Ills. 2000 w. Beton u Eisen—Aug. 5, 1912. No. 36132 E.

I. Reinforced Concrete Wharves and Warehouses at Lower Pootung, Shanghai, Somers Howe Ellis. No. 3962. II. The Direct Experimental Determination of the Stresses in the Steel and in the Concrete of Reinforced-Concrete Columns. William Charles Popplewell. No. 3953. III. Composite Columns of Concrete and Steel. William Hubert Burr. No. 3966. Three papers discussed together. Plates. 135 pps. Inst of Civ Engrs. No. 37086 N.

The Design and Construction of a Seven-Story Reinforced-Concrete Mercantile Building. E. I. Silver. Illustrated detailed description of a building in Chicago. 3000 w. Cement & Engng News. Oct., 1912. No. 36815.

Reinforced-Concrete Work at the Railway Terminals, Vera Cruz, Mex. R. W. Whitaker. Illustrates and describes construction work. 600 w. Eng News—Nov. 30, 1911. No. 28533.

A Reinforced Concrete Baseball Grand Stand. Illustrated description of a single deck structure with a roof of mill construction at Boston, Mass. 2500 w. Eng Rec—July 6, 1912. No. 34278.

The New Cellular Concrete Wall Along the Speedway, New York. Illustrates and describes details. 1200 w. Eng Rec —July 6, 1912. No. 34279.

A Nine-Story Concrete Abattoir. Illustrated description of a reinforced concrete building under construction in New York City. 1200 w. Eng Rec—Aug. 17, 1912. No. 35249.

A Reinforced Concrete Bakery in Philadelphia. Illustrates and describes a building with frame of reinforced concrete and outside walls of brick. 2000 w. Eng Rec—Aug. 10, 1912. No. 35123.

The Alterations and Rebuilding of the Uto Garage in Zürich (Der Um- und Aufbau der Uto-Garage in Zürich). S. Zipkes. States how the original wooden structure was remodelled and enlarged into one of concrete. Ills. 6000 w. Beton u Eisen—July 1, 1912. No. 35520 E.

Reinforced Concrete Curved Surfaces and Their Anchorage (Les Surfaces Courbes et les Ancrages dans le béton armé). M. Mesnager. Discussion on the method of tying curved corners in reinforced concrete construction. Ills. 4000 w. Génie Civil—April 20, 1912. No. 32777 D.

See also Viaducts, and Reinforced Concrete, under *Bridges;* Buildings, Campanile, Coal Pockets, Floors, Grain Elevator, and Piling, under *Construction;* Reinforced Concrete, under *Materials of Construction;* Sewers, under *Municipal;* and Dams, Intakes, Siphons, and Water Towers, under *Water Supply.*

Retaining Walls

Graphic Determination of Pressures on Retaining Walls. J. A. Main. Describes a simple method, found useful, that can be applied to any type of wall. 1500 w. Engr, Lond—March 1, 1912. No. 31151 A.

Steel Sheet Pile Retaining Walls. Myron H. Lewis. Illustrated description of a type of steel sheet piling, comparing the cost with the ordinary L-shaped reinforced concrete retaining walls. 1500 w. Eng News—Jan. 4, 1912. No. 29388.

A Reinforced Concrete Retaining Wall. Illustrated description of a wall recently constructed in connection with the electricity supply station at Bury. 700 w. Engr, Lond—Dec. 15, 1911. No. 29192 A.

A Concrete Retaining Wall Failure. An illustrated account of a massive wall pushed over by the impact of filling dropped some 30 or 40 ft. into place. 1800 w. Eng News—Feb. 29, 1912. No. 30938.

Failure of a Retaining Wall at the Kingshighway Viaduct, St. Louis, Mo. Photograph and account of an accident occurring June 30, 1912, due to the bursting pressure of an earth fill. Also editorial. 2000 w. Eng News—Sept. 26, 1912. No. 36354.

See also Canals, under *Waterways and Harbors.*

Rivetting

Diagram for Determining the Pitch of Rivets in Plate Girders. Edward C. Dilworth. Gives diagram and explanation of its use. 500 w. Eng News—March 21, 1912. No. 31472.

Tables for the Strength of One-Line Rivet Connections under Eccentric Load. E. L. Wood. Gives explanation. 600 w. Eng News—March 21, 1912. No. 31471.

See also Rivets, under MECHANICAL ENGINEERING, *Materials of Construction.*

Roofs

Built Up Roofs. W. S. Babcock. Discusses materials and types of roofing. General discussion. 10000 w. Pro Engrs' Soc of W Penn—Oct., 1911. No. 28241 D.

Roof Construction a Factor in Fires. Gives examples of roofs of different materials and their parts in checking or spreading fires. Ills. 1000 w. Met Work—June 7, 1912. No. 33601.

Calculations for Roof Constructions (Zur Berechnung der Deckenkonstructionen). R. Maillard. Theories and mathematical determinations. 3500 w. Schweiz Bau—June 1, 1912. No. 33546 D.

Graphic Means for Determining Rod-Support Spacing in Roofs Inclined at Various Angles (Graphische Ermittelung der Stabspannung eines eisernen Dachbinders mit verschiedener—gebrochener—Dachneigung). W. Schulz. Graphic design for sway-bracing under such conditions. 2500 w. Elektrotech Rundschau—Jan. 11, 1912. No. 30530 D.

The Glazed Roofing "Invincible" (La couverture vitrée "Invincible"). A. Moreau. Description of the Rendle system of joints for glass roofs. Ills. 3500 w. Bull Soc d'Encour—May, 1912. No. 34575 E + F.

An Investigation of Relative Economy in Simple Timber Roof Trusses. William Clyde Willard. Outline sketches and discussion of truss types for the roofs of exposition buildings. 1500 w. Eng News —Sept. 26, 1912. No. 36361.

Metallic Roofing. D. M. Buck. Short paper opening a general discussion. 20000 w. Pro Engrs' Soc of W Penn—Dec., 1911. No. 29921 D.

The Reinforced Concrete Roof on the Municipal Granary at Osthafen in Berlin (Das Eisenbetondach des Städtischen speichers am Osthafen in Berlin). Details of roof construction. Ills. and plate. 1700 w. Beton u Eisen—Feb. 26, 1912. No. 31353 E.

Sand Drying

The New Sand-Drying Plant of the United Railways Company of St. Louis. C. L. Hawkins. Illustrated detailed description. 2000 w. Jour Assn of Engng Socs—Feb., 1912. No. 31193 C.

Shops

Unit Concrete Shop Construction. Illustrated description of a new erecting shop at Worcester, Mass. 1500 w. Am Mach—March 14, 1912. No. 31128.

Shoring

Temporarily Shoring a 300-Ton Column. Illustrated description of methods adopted in connection with repairing old pile foundations in New York City. 1200 w. Eng Rec—Aug. 17, 1912. No. 35251.

Shoring the Academy of Music, New York. Illustrations with description of methods used. 1200 w. Eng Rec—Aug. 24, 1912. No. 35427.

Silos

The Economics of Silo Construction of Permanent Materials (Concrete and Clay Tile); Construction Methods and Costs. M. L. King. This first article of a series considers the contracting problem, silo essentials and silo materials. Ills. 1600 w. Engng & Con—March 6, 1912. Serial. 1st part. No. 31065.

The Calculation of Side and Bottom Pressures in Silos According to the Experiments of T. Bienert (Zur Berechnung der Boden- und Seitendrücke in Silos auf Grund der Versuche von T. Bienert). A. S. Oesterreicher. Formulas and tables for such determinations. 2400 w. Zeitschr des Ver deutscher Ing—Feb. 24, 1912. No. 31363 D.

Grain Silo in the Harbor of Rosario (Getreidesilo im Hafen von Rosario). E. Lufft. Detailed description of this grain storage in one of the leading ports of the Argentine Republic. Map and ills. Serial. 1st part. 4000 w. Zeitschr d Ver deutscher Ing — May 11, 1912. No. 33572 D.

An Iron and Limestone Silo of Reinforced Concrete (Ein in Eisenbeton ausgeführter Erz- und Kalksteinsilo). E. Elwitz. Large silo constructed for the Gewerkschaft Deutscher Kaiser, with a capacity of 10,000 cubic meters, and underlying tunnel for transportation. Ills. 2200 w. Stahl u Eisen—Aug. 15, 1912. No. 36112 D.

Simplon

The Approach to the Simplon Tunnel (Les Voies d'Accès au Simplon). M. A. Mauguin. A history of the engineering of the road leading to and from this famous tunnel. Maps and profiles. 13000 w. Rev Gen des Chemins de Fer—Oct., 1911. No. 28424 G.

Specifications

The Writing of Specifications. H. P. Breitenbach. Explains the comparative method of writing specifications. 4000 w. Eng News—March 7, 1912. No. 31080.

The Principles of Specification and Agreement Writing. C. R. Young. First of a series of articles discussing the art of fully, accurately and unambiguously describing the features and details adopted. 2500 w. Can Engr—Feb. 8, 1912. Serial. 1st part. No. 30371.

Engineering Specifications. Michael Longridge. Inaugural address before the Manchester Assn. of Engrs. On the relationship between purchasers, contractors, and consulting engineers, and the problems that arise out of engineering work as controlled by specifications. 5800 w. Mech Engr—Jan. 19, 1912. No. 30163 A.

Stacks

The Design of a Brick Chimney. J. Norman Jensen. Gives general principles to be applied and details of computations necessary for the design of a brick chimney 125 ft. in height. 3500 w. Eng News—May 9, 1912. No. 32681.

Designing Brick and Steel Chimneys. Everard Brown. Discusses method of determining height and area of stack, wind pressure and stability, methods of construction and conditions governing size of foundations. 2500 w. Power—Oct. 8, 1912. No. 36704.

Design and Construction of Smokestacks. Abstract of a paper by Henry V. Feder, in *Building Progress.* Deals particularly with the use of hollow tile instead of brick for chimneys. Ills. 2200 w. Can Engr—Sept. 19, 1912. No. 36087.

Factory Chimneys of Reinforced Concrete for the Hartmann Plant, Dantzig (Fabrik-schornstein aus Eisenbeton für Herrn Max Hartmann, Danzig). Herr Kirn. Reviews the designer's formulae, with views of the chimneys. 800 w. Beton u Eisen—Aug. 24, 1912. No. 36135 E.

See also same heading, under MECHANICAL ENGINEERING, *Steam Engineering.*

Steam Shovels

Methods of Analysis of Costs of Steam Shovel Work. Abstracted from a report by the Construction Service Co. to the Bucyrus Co. 2000 w. Engng & Con—Dec. 13, 1911. No. 28959.

130-Ton Steam Shovel for Rock Work. Illustrated detailed description of a shovel designed to meet severe requirements. 1500 w. Eng News—Jan. 25, 1912. No. 30093.

See also Panama Canal, under *Waterways and Harbors;* also Shops, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Steel

Light Compression Members. Topical discussion, March 11, 1912. Ills. 8000 w. Jour W Soc of Engrs—Sept., 1912. No. 37036 D.

Approximate Design in Structural Steelwork. George A. Merrill. Explains the author's method of estimating at short notice, particularly in regard to steelwork for office buildings and warehouses. 1600 w. Eng News — March 21, 1912. No. 31470.

The Steel Substructure of the Merchants and Manufacturers Exchange Building. Drawings and description of the construction of a 12-story building over the N. Y. C. & H. R. R. R. yard in New York City. 3000 w. Eng Rec—May 11, 1912. No. 32811.

Steel Framework of the Union Central Life Insurance Building. Illustrates and describes the framework of an office building with 540-ft. tower, having trusses carrying 14 stories, plate girder roof arches, and girder wind bracing. 2000 w. Eng Rec—Oct. 19, 1912. No. 36900.

Steelwork of the Palace Theater, New York. Illustrates and describes a structure with deep girders over auditorium and heavy fulcrum members carrying radial cantilever girders for balconies. 1500 w. Eng Rec—Oct. 26, 1912. No. 37009.

Steel Superstructure of the United Fire Companies' Building, New York. Illustrates and describes details of steel construction. 1500 w. Eng Rec—Dec. 9, 1911. No. 28706.

Heavy Girder Construction in the Adolphus Hotel at Dallas, Tex. Illustrated description of special structural-steel details. 1800 w. Eng Rec—Dec. 23, 1911. No. 29141.

Steelwork in Hotel McAlpin, New York. Illustrated description of deep girders with double and triple webs in foundation and superstructure. 2000 w. Eng Rec—March 30, 1912. No. 31661.

Store-Keeping

The Material-List Method of Store-Keeping. R. W. Heafield. Explains the main features of this system and its advantages. 1700 w. Can Engr—Apr. 11, 1912. No. 31959.

Submarine Excavation

See same heading, under *Waterways and Harbors.*

Substructures

Difficult Substructure Work on the United States Barge Office, New York. Illustrated description of troubles encountered in driving foundation and sheet piles through obstructions. 2000 w. Eng Rec—Aug. 3, 1912. No. 35024.

Tank Failure

Failure of an Air-Pressure Water Tank at Jessup, Iowa. Brief illustrated account. 1000 w. Eng News—April 18, 1912. No. 32213.

Tunnels

Notes on a Tunnel Survey. Frederick C. Noble. Describes the survey methods used in constructing under the East River, between South Ferry, Manhattan, and Joralemon Street, Brooklyn. Ills. 4000 w. Pro Am Soc of Civ Engrs—Dec., 1911. No. 29941 F.

Notes on a Tunnel Survey. Discussion of the paper by Frederick C. Noble. Plates and Ills. 3500 w. Pro Am Soc of Civ Engrs—March, 1912. No. 32134 F.

Notes on a Tunnel Survey. Continued discussion of paper by Frederick C. Noble. Ills. 2500 w. Pro Am Soc of Civ Engrs—April, 1912. No. 32383 F.

The Detroit River Tunnel. Abstract of paper by William J. Wilgus, before the Inst. of Civ. Engrs. of England, describing some of the details of the work. Ills. 5000 w. Ry Age Gaz—Nov. 10, 1911. No. 27779.

The Detroit River Tunnel. Continued discussion of William Sherman Kinnear's paper. 2500 w. Pro Am Soc of Civ Engrs—Nov., 1911. No. 28373 F.

The Detroit River Tunnel. Continued discussion of William Sherman Kinnear's paper. Ills. 7000 w. Pro Am Soc of Civ Engrs—Dec., 1911. No. 29942 F.

The Detroit River Tunnel, between Detroit, Mich., and Windsor, Can. William John Wilgus. With abstract of discussion. Considers the history of the river-crossing projects, the tunnel design and construction, costs, equipment, etc. Plates. 32000 w. Inst of Civ Engrs—No. 3915. No. 29960 N.

Grouting the Concrete Lining of the Rondout Pressure Tunnel. Herman L. Wittstein. Illustrates and describes methods employed on the Catskill aqueduct to produce a watertight conduit and secure perfect contact between the lining and the rock. 4000 w. Eng Rec—Dec. 30, 1911. No. 29235.

Tunnel Lining, Catskill Aqueduct. M. E. Zipser. Drawings and detailed description of this work, which has proved most successful. 11000 w. Eng News—May 2, 1912. No. 32564.

Methods of Constructing the Rondout Pressure Tunnel of the Catskill Aqueduct. From a paper by Lazarus White, read before the Soc. of Munic. Engrs. of N. Y. Illustrates and describes methods of driving, concreting, etc. 5000 w. Engng & Con—May 22, 1912. No. 33042.

Methods of Shaft Excavation in Earth at the Rondout Pressure Tunnel of the Catskill Aqueduct. From a paper by Lazarus White, before the Soc. of Munic. Engrs. of N. Y. Describes the methods adopted in driving the working shafts. 3000 w. Engng & Con—May 8, 1912. Serial. 1st part. No. 32653.

Methods of Alignment in Three Aqueduct Tunnels. Descriptions of methods used on the Yonkers pressure tunnel, the Van Cortlandt pressure tunnel, and the Wachusett aqueduct tunnel. 3500 w. Eng News—June 20, 1912. No. 33862.

Lining Part of the Bonlicou Grade Tunnel. John H. C. Gregg. Illustrates and describes methods followed in a rock tunnel on the Catskill aqueduct. 3000 w. Eng Rec—June 22, 1912. No. 33879.

A Compressed Air Tunnel Driven Without a Shield Through Wet Earth at Eastview. Describes a tunnel section carrying the Catskill Aqueduct through treacherous ground. 4000 w. Eng Rec—July 20, 1912. No. 34677.

Soft Ground Tunneling without Compressed Air on the Catskill Aqueduct. Chester M. Gould. Illustrated description of the work. Heavy timbering of the crown-bar type was required for running material. 3000 w. Eng Rec—Aug. 10, 1912. No. 35118.

Subaqueous Tunneling. Henry Japp. Illustrated account of work in this field, especially the East River tunnels at New York. 6000 w. Pro Engrs' Club of Phila—July, 1912. No. 35345 D.

The Laramie-Poudre Tunnel. Burgis G. Coy. Illustrated detailed description of this important feature of an irrigation project in Colorado. 4000 w. Pro Am Soc of Civ Engrs—March, 1912. No. 32130 F.

Notes on the Laramie Tunnel. David W. Brunton. Illustrated detailed account of the construction of this tunnel driven to convey water from the Laramie to the Cache-la-Poudre for use in irrigation. 5200 w. Bul Am Inst of Min Engrs—April, 1912. No. 32413 F.

The Laramie-Poudre Tunnel. Discussion of Burgis G. Coy's paper. 6000 w. Pro Am Soc of Civ Engrs—May, 1912. No. 33223 F.

Notes on the Laramie Tunnel Discussion of the paper of David W. Brunton. 3000 w. Bul Am Inst of Min Engrs—June, 1912. No. 34054 F.

Chicago River Tunnels—Their History and Method of Reconstruction. William Artingstall. Considers each of the three tunnels separately, illustrating and describing work. Discussion. Plates. 17000 w. Jour W Soc of Engrs—Nov, 1911. No. 29069 D.

Methods and Cost of Constructing Six Small Tunnels in Earth and Rock, Chicago Water Works. Myron B. Reynolds. A report of work carried out during 1906-1907. 4500 w. Engng & Con—July 3, 1912. No. 34241.

Grouting Leaks in a Chicago River Tunnel. Illustrated account of leaks which followed the construction of a bascule bridge pit above the roof, describing methods of grouting. 1800 w. Eng Rec—Aug. 3, 1912. No. 35019.

Air Resistance to Trains in Tube Tunnels. J. V. Davies. Gives results of experimental tests and deductions drawn. Ills. 9000 w. Pro Am Soc of Civ Engrs—April, 1912. No. 32380 F.

Air Resistances to Trains in Tube Tunnels. Discussion of J. V. Davies' paper. 3000 w. Pro Am Soc of Civ Engrs—Aug., 1912. No. 35631 F.

Methods of Constructing the Beacon Hill Rapid Transit Tunnel, Boston, Mass. Sketches and description. 1200 w. Engng & Con—May 22, 1912. No. 33041.

The Beacon Hill Subway Tunnel in Boston. Wilbur W. Davis. Illustrates and describes a double-track concrete lined tunnel partly built by shield method and a station built under Tremont Street subway. 5500 w. Eng Rec—July 13, 1912. No. 34430.

Methods and Costs of Constructing Two Rock Tunnels Under the Erie Canal for the Buffalo, N. Y., Water Works. C. H. Hollingsworth. Illustrates and describes the construction methods. 3000 w. Engng & Con—April 17, 1912. Serial. 1st part. No. 32144.

Methods of Constructing the Sand Patch Tunnel of the Baltimore and Ohio Railroad, with Records of Progress. Illustrated description of work in making a second bore through the summit of the Alleghany Mts. to relieve congestion. 1800 w. Engng & Con—June 26, 1912. No. 34102.

Lining the Snake Creek Tunnel. Oscar N. Friendly. Explains conditions and illustrates and describes this egg-shaped reinforced concrete lining. 3500 w. Eng & Min Jour—June 29, 1912. No. 34127.

Lining a Tunnel in Swelling Rock. Guy R. McKay. Illustrates and describes methods used on the Snake Creek tunnel in Utah. 3000 w. Eng Rec—May 25, 1912. No. 33073.

Arthur's Pass Tunnel, New Zealand. W. H. Gavin. An illustrated description of a 5⅜ mile railway tunnel through a mountain range, under construction by American machinery and partly under direction of American engineers. 5000 w. Eng News—May 9, 1912. No. 32682.

A Tunnel Street. Illustrates and describes a construction in upper part of New York City to provide access to a subway station. 1600 w. Munic Jour & Engr—Feb. 8, 1912. No. 30340.

The Large Tunnel beneath the Elbe (Il grande tunnel sotto l'Elba). Description of the construction difficulties of this double highway tunnel. Ills. Serial. 1st part. 3000 w. Il Cemento—Jan. 13, 1912. No. 31414 D.

The Elbe Tunnel in Hamburg and its Construction (Der Elbtunnel in Hamburg und sein Bau). O. Stockhausen. Plans and description of 448½ meter twin-tube tunnel under the river, for highway purposes, with large elevators at either end. Ills. Serial. 1st part. 4000 w. Zeitschr des Ver deutscher Ing—Aug. 17, 1912. No. 36160 D.

The Influence of Rock Pressures upon Deep Horizontal Tunnels (Der Einfluss des Gebirgsdrucks auf einem tief im Erdinnern liegenden Tunnel). Karl Brandau. Discussion on various theories of earth pressure, and practical points in construction. Ills. 4200 w. Schweiz Bau—May 25, 1912. No. 33524 D.

Determination of Probable Rock Temperature in a Continental Divide Tunnel. E. Lauchli. A study for a deeply overlaid six-mile railroad tunnel in Colorado. 4000 w. Eng Rec—June 8, 1912. No. 33618.

The Concorde Tunnel of the Paris Metropolitan Railway. Paul Seurot. Illustrations, drawings and detailed description of the design and construction. 13500 w. Inst of Civ Engrs—No. 3968. No. 37082 N.

Construction Stability (Stabilité des Constructions). Andre Pichot. Methods of calculating sub-aqueous tunnels. Ills. 4800 w. Tech Mod—Sept. 15, 1912. No. 36675 D.

See also Simplon, under *Construction;* Aqueducts, under *Water Supply;* Tunnels, under RAILWAY ENGINEERING, *Permanent Way and Buildings*, and Subways, under STREET AND ELECTRICAL RAILWAYS.

Tunnel Seepage

Seepage in Subaqueous Railroad Tunnels. Gives results of measurements in American tunnels and review of caulking methods. 3000 w. Eng Rec—Aug. 31, 1912. No. 35656.

Tunnel Ventilation

Ventilating Equipment of the Pennsylvania Tunnels at New York. B. W. Bennett. Brief description of the forced draft system, with results of some of the tests. 700 w. Eng Rec—June 8, 1912. No. 33620.

West Shore Weehawken Tunnel Ventilation. Illustrated description of the Churchill system of ventilation, recently installed. 1000 w. Ry Age Gaz—Aug. 9, 1912. No. 35103.

See also Ventilation, under MECHANICAL ENGINEERING, *Heating and Cooling.*

Underpinning

Forestalling the Destruction of a Church. Illustrated description of the reinforcement of tower foundations of St. John's Cathedral, Denver, Colo., to prevent settlement. 1500 w. Eng Rec—Dec. 2, 1911. No. 28527.

Underpinning Adjacent to the Bamberger Building. Describes the carrying of heavy walls on pipes, pneumatic cylinders, cantilevers and needle-beams. Ills. 1500 w. Eng Rec—Dec. 2, 1911. No. 28528.

Underpinning an Electric-Light Station. Illustrates and describes interesting methods used in repairing the Carroll St. sub-station, in Brooklyn, N. Y. 2200 w. Eng Rec—Feb. 17, 1912. No. 30469.

Underpinning of the Brooklyn Academy of Music. Describes supports found necessary for safety during subway excavation. Ills. 1500 w. Eng Rec—April 6, 1912. No. 31817.

Underpinning Buildings Adjacent to the Lexington Avenue Subway in New York. Describes 5-story brick walls carried on steel needles and jackscrews and new footings while piers and girders are built under them. Ills. 2500 w. Eng Rec—May 11, 1912. No. 32813.

Vibrations

Vibrations of Buildings Due to Steel Traffic. Elmer E. Hall. Gives some results obtained in San Francisco. Ills. 3500 w. Eng News—Aug. 1, 1912. No. 35038.

Warehouses

A Reinforced-Concrete Warehouse at Kobe. Naoji Shiraishi. Describes the design, materials and construction, and tests of this structure in Japan. 2000 w. Inst of Civ Engrs—No. 3908. No. 29958 N.

A Reinforced Concrete Piano Warehouse. Illustrates and describes an example of cantilever construction recently completed at Newark, N. J. 1000 w. Eng Rec—Jan. 27, 1912. No. 30066.

Methods and Costs of Erecting a Warehouse by the Aiken System of Erecting Concrete Walls. Illustrated description of the erection of a warehouse with monolithic walls. 1800 w. Engng & Con—Aug. 28, 1912. No. 35620.

Construction of a Concrete Pier Shed on a Cotton Dock at Galveston. J. L. Jacobs. Illustrated description of a fireproof warehouse. 1800 w. Eng Rec—April 13, 1912. No. 31954.

Waterproofing

Waterproofing Concrete Structures. Illustrates and describes methods adopted on the C., B. & Q. Ry. in Chicago. 800 w. Ry Gaz, Lond—March 8, 1912. No. 31252 A.

Waterproofing of Engineering Structures. W. H Finley. Gives the experience of the writer with asphalt as a waterproofing material. General discussion. Ills. 12500 w. Jour W Soc of Engrs—June, 1912. No. 34616 D.

Waterproofing Concrete Floors of Bridges. A. H. Rhett. States the problem and considers the fundamental principles to its solution. 1800 w. Eng Rec—April 13, 1912. No. 31952.

Concrete substructural Waterproofing. J. R. Wicklc. Read before a meeting of Archts., in Winnipeg. Discusses the membranous method and the integral method. 2000 w. Can Engr—Aug. 1, 1912. No. 35005.

A Complicated Waterproofing Problem. W. S. Lacher. Illustrated description of difficulties encountered in the remodelling of a steam power plant to install coal and ash-handling machinery. 2500 w. Ry Age Gaz—Sept. 6, 1912. No. 35804.

Waterproofing Concrete Structures on C., B. & Q. Track Elevation. G. A. Haggander. Illustrates and describes methods used in Chicago. 1800 w. Ry Age Gaz—Feb. 16, 1912. No. 30460.

The Insurance Value of Waterproofing. Myron H. Lewis. Discusses its value to concrete structures, especially considering the waterproofing of sewers, discussing methods and processes, cost, etc. General discussion. Ills. 6500 w. Jour Am Soc of Engng Cont—Oct., 1911. No. 29982 N.

Wind Bracing

Wind Bracing in the Woolworth Building. Illustrates and describes the bracing systems used for a 30-story building having a tower of 55 stories above the curb.

1700 w. Eng Rec—Feb. 24, 1912. No. 30736.

Wind-Bracing in the Grand Central Passenger Terminal, New York. Describes the system adopted for the 26-story portion of the main station building, and methods of computing wind stresses. 2000 w. Eng Rec—Aug. 10, 1912. No. 35124.

Woolworth Building

Construction of the Woolworth Building. Describes details of methods used in erecting this high building in New York City. Foundations carried through quicksand to rock and 23,000-ton 840-foot steelwork commenced before cellar was excavated. 4500 w. Eng Rec—July 27, 1912. No. 34807.

Steel Erection for the Woolworth Building. Brief illustrated description of work of interest on account of its magnitude and rapid execution. 2500 w. Eng Rec—June 29, 1912. No. 34118.

See also Foundations, Steel, and Wind Bracing, under *Construction.*

MATERIALS OF CONSTRUCTION

Asphalt

Development and Increase in the Use of Asphaltum. Harry Larkin. Explains the uses to which asphaltum is being applied. 2500 w. Jour Assn of Engng Socs —July, 1912. No. 34836 C.

See also same title, under *Roads and Pavements.*

Beams

See Reinforced Concrete Beams, under *Materials of Construction.*

Brick

The Manufacture of Sand-Lime Brick in Europe. P. L. Simpson. An account of plants visited during a recent trip. Ills. 6000 w. Cement & Engng News—June, 1912. No. 33761.

Brick Drying. H. C. Russell. Discusses the so-called progressive dryers in which the brick, fresh from the machine, are placed, dried in the progressive principle, and removed to the kiln to be burned. 3500 w. Am Soc of Heat & Vent Engrs—June, 1912. No. 34745 N.

See also same heading, under *Roads and Pavements.*

Building Stones

Granites, Marbles, and Other Building Stones of the South. Ernest F. Burchard. Remarks on the importance of stone as a mineral product, and the stone resources of the south, their distribution, etc. 3500 w. Mfrs' Rec—Feb. 22, 1912. (Special.) No. 30747 D.

Tests on Fireproof Stone (Prüfung feuerfeste Steine). M. Gary. Gives results on ten stones tested to the melting point. 2400 w. Zitschr des Ver deutscher Ing—Jan. 6, 1912. No. 30564 D.

The Building Stones of South Africa. Information from the report of the Director of the Geol. Surv. of S. Africa concerning the deposits of sandstone and granite. 2500 w. Quarry—Sept., 1912. No. 35989 A.

Experiments on the Weathering of Portland Stone. J. S. Owens. Reports experiments made to measure the rate of loss of strength of stones from weathering under varied conditions. Portland stone was selected as most suitable and most commonly used in London. 3500 w. Surveyor—Sept. 20, 1912. No. 36487 A.

See also same title, under MINING AND METALLURGY, *Minor Minerals.*

Cement

Hardness of Plasters and Cements, and a Simple Chronographic Apparatus for Recording Set. Charles F. McKenna. Explains the term "hardness" as applied to cement, and illustrates and describes apparatus for observing changes in the setting process. 2500 w. Cement—Jan., 1912. No. 30444 C.

The Essential Hydraulic Elements in Calcareous Cement (L'idraulite elemento essenziale dei cementi calcarei). F. Ferrari. Discussion on the chemical components of cement. Serial. 1st part. 1800 w. Il Cemento—Mar. 30, 1912. No. 32309 D.

The Effect of High-Pressure Steam on the Crushing Strength of Portland Cement Mortar and Concrete. Rudolph J. Wig. Reports investigations to determine what acceleration hardening could be obtained by using steam under pressure, with corresponding higher temperatures. Ills. 25 pages. Bureau of Stand, Tech. paper No. 5—Sept. 5, 1911. No. 31606 N.

Tests of the Absorptive and Permeable Properties of Portland Cement Mortars and Concretes, Together with Tests of Damp-proofing and Waterproofing Compounds and Materials. Rudolph J. Wig. and P. H. Bates. Report of investigations. Ills. 127 pages. Tech Papers of Bureau of Stand, No. 3—Aug. 22, 1911. No. 34495 N.

Tests of the Absorptive and Permeable Properties of Portland Cement Mortars and Concretes, Together with Tests of Damp-proofing and Waterproofing Compounds and Materials. R. J. Wig and P. H. Bates. Report of tests. Ills. 127 pages. Bureau of Stand, Tech. paper No. 3—Aug. 22, 1911. No. 31607 N.

The Effect of High-Pressure Steam on the Crushing Strength of Portland Cement Mortar and Concrete. Rudolph J. Wig. Investigations made to determine what acceleration in hardening could be obtained. Ills. 25 pages. Tech Papers of Bureau of Stand, No. 5—Sept. 5, 1911. No. 34497 N.

Autoclave Boiling Test for Cement. H. J. Force. Describes a new soundness test for cement, inaugurated by the Lackawanna R. R., and the behavior of the material. Also editorial. 6000 w. Eng News—June 13, 1912. No. 33707.

Accelerated Tests for Constancy of Volume in Portland Cements. Abstracts of two papers read before the Int. Assn. for Test. Materials, summarizing the discussions concerning the value of such tests. 5000 w. Engng & Con—Sept. 4, 1912. No. 35793.

Making Indestructible Hydraulic Cements. Edward Duryea. Information concerning cements and their durability. 2000 w. Cement & Engng News—May, 1912. No. 32855.

Further Investigations of Puzzolan-Portland Cements. Edward Duryea. Report of tests made. 2500 w. Eng News —Aug. 15, 1912. No. 35236.

Investigation Respecting the Adulteration of Portland Cement. R. C. Carpenter. Gives a brief resumé of the use of various adulterants, and their effect upon the quality of the cement. 2000 w. Sib Jour of Engng—Dec., 1911. No. 30048 C.

Cement. Ernest F. Burchard. Gives statistics of cement production in 1910. 3500 w. Cement—Oct., 1911. No. 28315 C.

Cement. Editorial review of lectures by Bertram Blount, delivered before the Inst. of Chemistry at King's College. 2500 w. Engng—Dec. 8, 1911. No. 29056 A.

Final Report of the Special Committee on Uniform Tests of Cement. Report with description of methods of testing. 8500 w. Pro Am Soc of Civ Engrs—Feb., 1912. No. 30901 F.

A Summary of Recent Investigation of Portland Cement. J. C. Bishop. 2500 w. Sib Jour of Engng — May, 1912. No. 33205 C.

United States Government Specifications for Portland Cement. Gives the specifications as adopted by the departmental conferences, Feb. 13, 1912. 3000 w. Chem Engr—May, 1912. No. 33136 C.

The Metamorphism of Portland Cement. Albert B. Pacini. An analysis of the changes in Portland cement and conditions affecting changes. 4000 w. Concrete-Cement Age—July, 1912. No. 34438.

The Hardening of Cement Mortar in Frost (Verharding van cement-mortels biz vorst). L. Bienfait and H. Baucke. Experiments with various substances to prevent freezing. 3000 w. De Ingenieur—Feb. 10, 1912. No. 31379 D.

Slag Portland Cement in Comparison with Portland Cement (Eisenportlandzement im Vergleich zu Portlandzement). H. Passow. Results of various tests on the comparative strength of these two products. 2100 w. Stahl u Eisen—Mar. 21, 1912. No. 32011 D.

Notes on the Question of Slag Cement (Beiträge zur Frage des Schlackenbetons). A. Knaff. Chemical analytical comparisons of various grades of slag cement. Diagrams. 2200 w. Serial. 1st part. Stahl u Eisen—June 6, 1912. No. 34500 D.

Methods of Testing Coatings for Cement Surfaces. Cloyd M. Chapman. Gives recommonded tests of concrete waterproofers and damp-proof concrete coatings. 2500 w. Eng Rec—June 1, 1912. No. 33295.

Free Lime in Portland Cement. H. E. Kiefer. Read before the Am. Chem. Soc. Presents results of tests and states points worthy of consideration. 2500 w. Chem Engr—June, 1912. No. 33959 C.

Silica in Rotary Kiln Portland Cement. Dr. Otto Dormann. Trans. from *Zeit. für Angewandte Chemie und Centralblett für Tech. Chemie.* A report of experiments and results in manufacturing practice. 1500 w. Engng—July 5, 1912. No. 34474 A.

The Future of the Rotating Furnace in Hainault (L'Avenir du Four Rotatif dans le Hainaut). Louis Wuyts. A study of artificial Portland cement produced in rotating furnaces. 3000 w. Tech Mod—Apr. 1, 1912. No. 32093 D.

Tufa Cement, as Manufactured and Used on the Los Angeles Aqueduct. J. B. Lippincott. Gives a general description of the line and of the city cement plant, and the tufa cement used, its action in field work, etc. 7000 w. Pro Am Soc of Civ Engrs—Oct., 1912. No. 37146 F.

Cement Grinding. L. H. Sturtevant: Illustrated description of a cement grinding unit, explaining its advantages. 1500 w. Met & Chem Engng — June, 1912. No. 33419 C.

Portland Cement on Public Works. Gerald Thornhill Edwards. Read before the Inst. of Water Engrs. Enumerates different tests which should be carried out to insure perfectly sound cement, with remarks on properties and uses. Discussion. 8000 w. Surveyor—Dec. 15, 1911. No. 29224 A.

Problems Involved in the Selection of Machinery for the Manufacture of Portland Cement. Paul C. Van Zandt. Considers quarry machinery and crushers, grinding and pulverizing machinery, rotary kilns, etc. Ills. 7000 w. Eng News—Dec. 14, 1911. No. 28953.

The Plant of the Crescent Portland Cement Company. W. B. Ruggles. Illustrated description of plant at Wampum, Pa., and its equipment. 2500 w. Cement Age—Dec., 1911. No. 28918 C.

The New Tidewater Portland Cement Plant at Union Bridge, Maryland. Illustrates and describes large mills using individual motors for the operating machinery. 3500 w. Eng Rec—April 13, 1912. No. 31955.

"Glory Hole" Quarrying Process. Paul C. Van Zandt. Illustrated description of this method. 1800 w. Cement Age—Dec., 1911. No. 28917 C.

See also Cement, and Cement Gun, under *Construction;* Stucco, under *Materials of Construction;* Cement Plants, under MECHANICAL ENGINEERING, *Machine Works and Foundries;* Blast-Furnace Slag, under MINING AND METALLURGY, *Iron and Steel,* and Cement, under MINING AND METALLURGY, *Minor Minerals.*

Cement Mortar

The Effects of Alum and Clay in Cement Mortar (Versuche über den Einfluss des Zusatzes von Alaun und Seife auf das Abbinden von Zement sowie auf die Erhärtungsfähighkeit und Wasserdichtigkeit von Zementmörtel). H. Burchartz. Experiments and tabular results. 4500 w. Beton u Eisen—Oct. 2, 1911. No. 28401 E.

Cement Storage

The Storage of Portland Cement. Suggestions for dealers, contractors and users. Ills. 1000 w. Cement—Feb., 1912. No. 31497 C.

Clays

The Effect of Preliminary Heating Treatment Upon the Drying of Clays. A. V. Bleininger. Investigations undertaken to study the possibility of using excessively plastic clay are described and the results discussed. Ills. 53 pages. Tech. Papers of Bureau of Stand, No. 1—Dec. 6, 1910. No. 34494 N.

The Testing of Clay Refractories, with Special Reference to Their Load Carrying Capacity at Furnace Temperatures. A. V. Bleininger and G. H. Brown. Deals with fire clays at furnace temperatures. Ills. 78 pages. Tech. Papers of Bureau of Stand, No. 7—Dec. 15, 1911. No. 34499 N.

See also Terra Cotta, under *Materials of Construction,* and Clays, under MINING AND METALLURGY, *Minor Minerals.*

Columns

The Strength of Columns. W. E. Lilly. Considers briefly the derivation of the Rankine-Gordon formula and the writer's formula for columns, and compares some of the values obtained from tests on columns with those derived from formulae. 4000 w. Pro Am Soc of Civ Engrs—Aug., 1912. No. 35624 F.

See also Reinforced Concrete Columns, under *Materials of Construction.*

Concrete

The Selection and Proportion of Aggregates for Concrete. From a publication by Albert Moyer giving useful information. Tables. 1800 w. Can Engr—Dec. 14, 1911. No. 29023.

Economical Selection and Proportion of Aggregates for Portland Cement Concrete. Albert Moyer. Aims to give a practical method which will enable any constructor to make economical use of the best aggregates. 8000 w. Cement—Dec., 1911. No. 29874 C.

Proportioning Gravel Concrete. Clifford Older. Read before the Ill. Soc. of Engrs. & Survs. Gives general specifications for gravel concrete which have resulted in satisfactory work. 3000 w. Eng Rec—Feb. 8, 1912. No. 30253.

A Study of Sand for Use in Cement Mortar and Concrete. E. S. Larned. Gives results of mechanical analysis and comparative tensile tests of sands and much information. General discussion. 3500 w. Jour Assn of Engng Socs—April, 1912. No. 33115 C.

Proportioning Gravel Concrete. Clifford Older. From a paper before the Ill. Soc. of Engrs. & Survs. Describes specifications for gravel concrete in use by the Illinois Highway Commission for several years. 1800 w. Munic Engng—April, 1912. No. 33104 C.

Proportioning Gravel Concrete. Clifford Older. Describes specifications used by the Illinois Highway Commission. 2000 w. Cement & Engng News—Aug., 1912. No. 35227.

Consistency and Time in Mixing Concrete. H. F. Porter. Discusses the proper mixing and the importance of time and the proper consistency. 2000 w. Cement Age—June, 1912. No. 33952.

Concrete from Limestone Rubble (Beton von Kalksteinschotter). H. Nitzsche. Tables of tests made on such concrete. 2700 w. Beton u Eisen—June 12, 1912. No. 34545 E.

Concrete Mixing. Considers the methods whereby the constituents can best be brought together so as to bind pebbles or fragments of stone to form an artificial variety of rock akin to conglomerate. 1200 w. Builder—May 31, 1912. Serial. 1st part. No. 33656 A.

A Survey of the Concrete Aggregates of Wisconsin. M. O. Withey. Describes the methods employed in testing the sands, broken stones and gravels in order to ascertain their merits as aggregates for making mortar and concrete. Ills. 4000 w. Wis Engr—Dec., 1911. No. 29070 C.

Directions and Suggestions for the Inspection of Concrete Materials. Jerome Cochran. First of a series of articles describing current practice in the inspection of concrete. 6500 w. Engng & Con—Jan. 31, 1912. Serial. 1st part. No. 30142.

Specifications and Methods of Tests for Concrete Materials. Important sections from the committee report presented to the National Assn. of Cement Users. 2500 w. Eng Rec—March 30, 1912. No. 31658.

Uses and Misuses of Concrete and Reinforced Concrete. DeWitt V. Moore. Read before the Indianapolis Archt. Assn. Discusses this material and its handling and applications. 3500 w. Munic Engng—Jan., 1912. No. 29998 C.

Uses and Misuses of Concrete and Reinforced Concrete. DeWitt V. Moore. Considers uses for which this material is adapted, its proper application, etc. Ills. 4000 w. Cement & Engng News—Feb., 1912. No. 30821.

Steam Tests on Concrete and Mortar. Notes taken from a report of tests made at the St. Louis laboratories to determine what acceleration in hardening could be obtained by using steam under pressure with corresponding higher temperatures. 3000 w. Eng Rec—March 16, 1912. No. 31218.

Field Compression Tests of Concrete. G. H. Bayles. Report of tests and results in connection with the construction of buildings in Brooklyn, N. Y. 2000 w. Eng News—March 28, 1912. No. 31630.

The Need of a Compression Test for Concrete. Cloyd M. Chapman. Shows the importance of testing for the qualities which it must possess. 1500 w. Eng News—Aug. 29, 1912. No. 35643.

Destruction of Cement Mortars and Concrete Through Expansion and Contraction. Abstract of a paper by A. H. White before the Am. Soc. of Test. Mat., giving results of investigations. 5000 w. Can Engr—June 27, 1912. No. 34131.

Influence of Moisture on the Expansion and Contraction of Concrete. Abstract of a paper by Logan Waller Page, read before the Ohio State Engng Soc. Report concerning tests and results. 2000 w. Eng Rec—Oct. 5, 1912. No. 36545.

New Concrete and Reinforced Concrete Testing Machines (Neue Beton- und Eisenbeton-Prüfmaschinen). J. Schmidt. Machines for determining the proper mixing of concrete and also for testing. Ills. Serial. 1st part. Elek Rundschau—Feb. 28, 1912. No. 31378 D.

The Strength of Bond on Joining Old Concrete to New. A report of tests made of the strength of concrete joints, the test being in compression. Ills. 3000 w. Cornell Civ Engr—Dec., 1911. No. 29079 C.

The Permissable Shear of Concrete and its Technical and Economic Importance (Die zulässige Betonbeanspruchung und ihre technische und wirtschaftliche Bedeutung). R. Farber. Discusses the relation between construction to resist shear and cost. Serial. 1st part. 2600 w. Beton u Eisen—Nov. 8, 1911. No. 28879 E.

A Test of Watertightness of Concrete Tunnel Lining Under High Head. C. Raymond Hulsart. Gives a description of the lining and of the methods, details, and results of test. Ills. 2500 w. Eng News—Dec. 14, 1911. No. 28955.

Safe Velocities of Water on Concrete. Arthur P. Davis. Gives experience with structures of the Reclamation Service. Ills. 1200 w. Eng News—Jan. 4, 1912. No. 29391.

The Lateral Pressure of Liquid Concrete. Hector St. George Robinson. Brief report of experiments. 600 w. Inst of Civ Engrs, No. 3975—May, 1912. No. 33160 N.

Steam Curing Concrete Products. Robert F. Havlik. Drawings and description of a Detroit factory with special reference to steam room layout. 4000 w. Concrete-Cement Age—Aug., 1912. No. 35218.

Some of the Properties of Oil-Mixed Portland Cement Mortar and Concrete. Discussion of the paper by Logan Waller Page. 4000 w. Pro Am Soc of Civ Engrs—Nov., 1911. No. 28375 F.

Oil-Mixed Portland Cement Concrete. Logan Waller Page. An illustrated report of laboratory investigations, service tests, method of making, uses, etc. 6500 w. U. S. Dept of Agri, Bul. 46—Aug. 8, 1912. No. 35819 N.

Investigations of Modified Cements and of Alkali Action on Concrete of the United States Reclamation Service. From a paper by J. Y. Jewett, read before the Int. Assn. for Test. Materials, reviewing studies by the Reclamation Service engineers, and the modifications adopted by them. 1800 w. Engng & Con—Sept. 4, 1912. No. 35792.

New Uses for Concrete (Neuanwendungen in Beton). Illustrates and describes some agricultural uses for concrete. 3000 w. Beton u Eisen—Aug. 24, 1912. No. 36134 E.

Ornamental Treatment of Concrete Surfaces. William Walter Smith. Describes methods of treatment and results. 3000 w. Am Archt—Jan. 24, 1912. No. 29824 D.

Concrete Testing in the Construction of the New War Department Building at Vienna (Die Betonkontrolle beim Neubau des k.u.k. Kriegsministerialgebäudes in Wien). J. Kromus. Details the great care exercised in the erection of this large concrete building. Ills. Serial. 1st Part. 3300 w. Beton u Eisen—Nov. 27, 1911. No. 28880 E.

See also Concrete, under *Bridges;* Concrete, Concrete Poles, and Shops, under *Construction;* Ligno-Concrete, under *Materials of Construction;* Concrete Testing, under *Measurement;* Sewers, under *Municipal;* Concrete, under *Roads and Pavements;* Concrete Pipes, under *Water Supply*, and Poles, under ELECTRICAL ENGINEERING, *Transmission.*

Concrete Plant

A Compressed Air Concrete Mixer and Conveyor. Illustrated description of a plant in successful operation at Holtwood, Pa. 2000 w. Eng News—Aug. 8, 1912. No. 35096.

Concrete Tests

Notes on the Question of Bending Tests for Concrete Beams (Beitrag zur Frage der Biegebalkenprobe für Beton). H. Nitzsche. Describes the test machine, "Reformprüfer," for determining the flexibility of materials, with results of such tests on concrete. Ills. Two parts. Part I. 4500 w. Beton u Eisen—July 1, 1912. No. 35522 E.

Corrosion

See same heading, under ELECTRICAL ENGINEERING, *Electro-Chemistry.*

Cross-Arms

Strength Tests of Cross-Arms. Thomas R. C. Wilson. Illustrated report of tests and results. 3000 w. U. S. Forest Serv., Circ. 204—June 5, 1912. No. 33807 N.

Elasticity

The Relations Between the Laws of Guest and Hook (Algunas Consideraciones sobre las Relaciones entre las Layes de Guest y Hook). A. C. Pugnali. Discussion of the laws of elasticity. 4800 w. Anales d l Soc Cien Argentina—March, 1911. No. 28513 N.

Fireproof Tiling

A Plant for Testing Fire-Proof Tiling. Illustrates and describes a plant used in making tests. and gives supplementary information. 2000 w. Eng News—Aug. 15, 1912. No. 35235.

Glass

Glass in Building Operations. E. H. Bostock. First of a series of articles treating of glass wth particular reference to such details as may be useful to architects. 2500 w. Am Archt—Nov. 8, 1911. Serial. 1st part. No. 27742.

Hollow Tile

Proposed Specifications for Hollow Clay Tile Building Blocks. Virgil G. Marani. Gives specifications recommended by the Building Dept. of Cleveland, O., after exhaustive tests. 1500 w. Eng News—Feb. 8, 1912. No. 30357.

Hydraulic Materials

Materials for Hydraulic Construction at Eritrea (I materiali per costruzioni idrauliche nella Colonia Eritrea). L. Luigi. Description of the available materials. 1200 w. Ann della Soc d Ing e d Arch Ital—Nov. 16, 1911. No. 29813 E.

Iron

Investigations by the German Society for Bridge and Iron Works with Iron Constructions for the Building of Bridges (Untersuchungen des Vereines deutscher Brücken- und Eisenbaufabriken mit Eisenkonstruktionen für den Brückenbau). B. Stock. Report of tests made. Ills. 4200 w. Zeitschr des Ver deutscher Ing—July 13, 1912. No. 35535 D.

Lead

Value of Lead in Architecture. Discusses the value of lead as durable roof covering. Ills. 1800 w. Met Work—Sept. 6, 1912. No. 35801.

Ligno-Concrete

Ligno-Concrete. Gerald O. Case. Report of investigations made to determine whether concrete could be efficiently and economically reinforced by timber.

5500 w. Soc of Engrs—April 1, 1912. No. 32153 N.

Lime

Hydrated Lime, and Tests Showing the Comparative Strength of Different Kinds of Lime Mortars. W. B. Joseph. Explains the advantages of hydrated lime, the methods of manufacture in use in its preparation, tests and results. 2000 w. Cornell Civ Engr—March, 1912. No. 31592 C.

Lumber

The South's Lumber Problem. Hu Maxwell. Urges the manufacture of the woods into commodities instead of shipping lumber. 2500 w. Mfrs' Rec—Feb. 22, 1912. (Special.) No. 30756 D.

The Economical Piling of Lumber. James F. Hobart. Suggestions for the best and quickest way. Ills. 2000 w. Wood Craft—April, 1912. No. 31787.

Materials

Strength, Testing, and Application of Materials to Engineering Structures. William Cawthorne Unwin. Abstract of presidential address before the Inst. of Civ. Engrs. Considers the object of a study of the strength of materials, the theory of elasticity, testing, comparative structural value, etc. 5000 w. Mech Engr—Nov. 7, 1911. No. 28352 A.

Address of William Cawthorne Unwin. Discusses some of the principles on which engineering structures are based; the strength of materials, theory of elasticity, testing, applications, value, etc., with remarks on engineering education. 29 pages. Inst of Civ Engrs. Nov. 7, 1911. No. 33171 N.

Mine Timber

See Timbering, under MINING AND METALLURGY, *Miscellany*.

Nails

Nails (Le Clou). Ch. Frémont. Historical sketch on the origin, uses, and manufacture of nails from the earliest known times to the present. Ills. Serial. 1st part. 29 pages. Bull Soc d'Encouragement—Feb., 1912. No. 32085 G.

Paint

Protective Coatings. Walther Riddle. Brief discussion of materials used and their applications. 3500 w. Pro Engrs' Soc of W Penn—Feb., 1912. No. 31448 D.

What Makes White Lead Chalk and How Chalking May Be Prevented. Henry A. Gardner. Read before the Penn. State Assn. of Master Painters. Discusses recent theories and states conclusions. 1500 w. Chem. Engr—May, 1912. No. 33137 C.

Density and Thermal Expansion of Lin- Investigations with tabulated results. 27 pages. Tech Papers of Bureau of Stand, seed Oil and Turpentine. H. W. Bearce. No. 9—April 15, 1912. No. 34601 N.

A New Method for Testing Paint Films and Preservative Coatings for Iron and Steel. W. C. Slade. Describes a proposed method which involves the electrolytic theory of corrosion, and utilizes the principle of alternate wetting and drying. 5500 w. Chem Engr—July, 1912. No. 34877 C.

A Brief Summary of American Tests on Paints for Metallic Structures. Extracts from a paper by Allerton S. Cushman, before the Int. Assn. for Test. Mat. Reviews tests made and results. 4500 w. Engng & Con—Aug. 28, 1912. No. 35610.

The Effect of Pigments Upon the Constants of Linseed Oil. Henry A. Gardner. Describes tests and results showing the cause of paint hardening. 2000 w. Jour Fr Inst—Oct., 1912. No. 37105 D.

Protective Value of Paints for Steel Structures. J. H. Pitard. 2d prize paper. How to secure the best results in painting steel and iron. 1600 w. Ry Age Gaz—Dec. 1, 1911. No. 28569.

See same heading under MARINE AND NAVAL ENGINEERING, and Shop Practice, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Pipe Coverings

See Pipe Protection, under *Water Supply.*

Reinforced Concrete

Detailing Reinforced Concrete. Jerome Cochran. An attempt to outline rules which will help toward uniform practice. 8500 w. Eng News—April 4, 1912. No. 31799.

Calculations on Reinforced Concrete Cisterns (Statische berekening van gewapend beton-regenbakken). W. M. Dudok. Mathematical discussion. Diagrams. 7000 w. De Ingenieur—May 11, 1912. No. 33583 D.

Reinforced Concrete. T. E. Thain. Read before the S. Wales Inst. of Engrs. Reviews the history of this material, indicating the principal features in present practice and discussing the general systems for the use of the material. Ills. 4000 w. Ir & Coal Trds Rev—July 19, 1912. No. 34905 A.

Failures of Reinforced Concrete Structures. Edward Godfrey. An examination of facts in regard to wrecked buildings, considering their design. General discussion. Ills. 1200 w. Pro Engrs Soc of W Penn—June, 1912. No. 34803 D.

Electrolysis of Reinforced Concrete. Harold P. Brown. Describes in detail the measures taken to stop the electrolytic action on the concrete of the Allentown packing house, and to repair the damage. Ills. 4500 w. Eng News—July 25, 1912. No. 34789.

Influence of Electric Currents on Reinforced Concrete (Einfluss des elektrischen Stromes auf Eisenbeton). Wilhelm Petry. Notes on the tests made by Prof. O. Berndt for determining electrolytic action. Ills. 1300 w. Beton u Eisen—June 12, 1912. No. 34543 E.

Electrical Effects Upon Reinforced Concrete (Les Effets de l'Electricité sur le Béton Armé). An account of the research work performed at the Darmstadt, (Germany), and Vermont (U. S.), Universities. Ills. 5400 w. Genie Civil—Sept. 14, 1912. No. 36679 D.

Methods for Calculating Reinforced Concrete (Méthodes de Calcul du Béton Armé). A. Nivet. Gives formulas for calculating tension, compression, and correct spacing and size of reinforcement. Diagrams. Serial. 1st part. 3000 w. Tech Mod—Aug. 1, 1912. No. 35578 D.

L. C. C. Regulations for Reinforced Concrete Buildings. Gives draft regulations presented for consideration. 5000 w. Builder—Dec. 29, 1911. No. 29445 A.

Reinforced Concrete in New York City. Gives the regulations adopted Dec. 29, 1911, by the Superintendents of Buildings of all five boroughs of the city; effective Jan. 1, 1912. 2000 w. Eng Rec—Jan. 6, 1912. No. 29415.

Reinforced Concrete Regulations. Gives regulations recently adopted by New York, N. Y., and by Cleveland, O. 7000 w. Eng News—Jan. 18, 1912. No. 29835.

New Building By-Law for Toronto. Gives text of a new by-law regulating reinforced concrete construction. 4500 w. Can Engr—May 30, 1912. Serial. 1st part. No. 33834.

The Influence of Reinforced Concrete upon the Construction and Architecture of Modern High Building (Einfluss des Eisenbetons auf Konstruktion und Architectur beim modernen Hochbau). L. Roth. Cites numerous examples of bridges, buildings, etc. Ills. 3200 w. Zeit d Oest Ing u Arch Ver—Dec. 29, 1911. No. 29755 D.

Unit Costs of Reinforced Concrete for industrial Buildings. Chester S. Allen. Read before the Nat. Assn. of Cement Users. Information based on work during the past two years. 2000 w. Can Engr—March 28, 1912. No. 31683.

Testing of Materials Used in Reinforced Concrete. A. Alban H. Scott. From a paper read before the Soc. of Archts. Outlines a procedure recommended. Also discussion. 7000 w. Builder—March 22 and 29, 1912. Serial. 2 parts. No. 31868 each A.

Elastic Deformation Tests on Reinforced-Concrete Buildings. Abstracts from report of tests made under the auspices of the Nat. Assn. of Cement Users, indicating the nature of the work and its value. 6000 w. Eng News—April 18, 1912. No. 32209.

The Use and Stability of Reinforced Concrete in Sea Water. Raymond Baffery. Read before the Nat. Assn. of Cement Users. Discusses the subject generally, and also under the heads of mass concrete, reinforced concrete structures, and reinforced concrete caissons. 3500 w. Cement & Engng News—July, 1912. No. 34396.

Reinforced Concrete in Maritime Work (Il cemento armato nelle opere marittime). The possibilities of reinforced concrete in pilings, sea walls, etc. Ills. 2800 w. Monit Tecnico—Jan. 30, 1912. No. 30634 D.

The Specialist Constructor of Reinforced Concrete. From a paper by Lucian Serraillier, in *Concrete & Constructional Engng*. Discusses the proper position of these specialists in the engineering field. 2500 w. Engng & Con—Feb. 21, 1912. No. 30711.

The Reinforced Concrete Specialist in England. Lucien Serraillier. Considers the opportunities for the architect in the use of this material. 2500 w. Cement—March, 1912. No. 32608 C.

Reinforced Concrete in Great Britain. W. Noble Twelvetrees. The present number considers the nature of this material, introductory to a discussion of the systems. 3000 w. Builder—Jan. 26, 1912. Serial. 1st part. No. 30293 A.

A New Type of Steel and Concrete Construction. Describes a type of construction being employed in the First Baptist Church of Syracuse, N. Y. Ills. 1200 w. Eng Rec—April 27, 1912. No. 32391.

Methods of Designing a Reinforced Concrete Settling Basin for the Muskogee, Oklahoma, Water Works. From a paper by Alexander Potter before the Am. Water Works Assn. Describes the designing of the reinforced concrete work. 4000 w. Engng & Con—June 12, 1912. No. 33702.

The Artificial Mountains in the Metropolitan Zoological Gardens in Budapest (Die künstlichen Berge des hauptstädtischen Tiergartens in Budapest). Josef

Schmaus. General description of the artificial landscape of reinforced concrete introduced in these gardens. Ills. Serial. 1st part. 2000 w. Beton u Eisen—May 8, 1912. No. 33518 E.

A Swimming Pool with Underlying Storage Rooms (Schwimmbasin mit unterliegendem Speicherbassin). Karl Rössle. Details of reinforced concrete tank with a sloping bottom which forms the ceiling of a store-room below the pool. Ills. 2500 w. Beton u Eisen—May 28, 1912. No. 33550 E.

See also Arches, Reinforced Concrete, and Viaducts, under *Bridges;* Buildings, Concrete Posts, Conduits, Reinforced Concrete, Roofs, and Warehouses, under *Construction;* Sewer Pipes, under *Municipal;* Reinforced Concrete, under *Roads and Pavements;* Purification, under *Water Supply;* Docks, Locks, Piers, and Wharves, under *Waterways and Harbors;* Corrosion, under ELECTRICAL ENGINEERING, *Electro-Chemistry;* Stamp Foundations, under MINING AND METALLURGY, *Ore Dressing and Concentration;* and Coaling Stations, Pumping Stations, Ties, and Water Tanks, under RAILWAY ENGINEERING, *Permanent Way and Buildings.*

Reinforced Concrete Beams

Economical Design of Reinforced Concrete Beams. R. B. Ketchum. Discusses rectangular beams, slabs, and T-beams. Tables and diagrams. 1500 w. Jour Assn of Engng Socs—Dec., 1911. No. 29931 C.

Reinforced Concrete Beams. Explains a simple theory, illustrating by example. 1500 w. Prac Engr—Nov. 17, 1911. No. 28350 A.

Reinforced Concrete Beams with Unsymmetrical Cross-Sections (Balken mit unsymmetrischen Querschnitten im Eisenbetonbau). Paul Grosche. Mathematical discussion. Ills. 2200 w. Serial. Part I. Beton u Eisen—Nov. 8, 1911. No. 28878 E.

The Economical Design of Reinforced Concrete Beams. Abstract of an article by R. B. Ketchum, in a bulletin of the Univ. of Utah, giving tables, diagrams and design studies of beams. 2500 w. Engng & Con—June 26, 1912. No. 34105.

Reinforced Concrete Beams. Ewart S. Andrews. Comparison of calculations with those for steel beams. 700 w. Prac Engr—May 31, 1912. No. 33665 A.

Formula for Lever Arm of Double Reinforced-Concrete Beams. Arthur G. Hayden. Gives a formula found useful as a time saver. 500 w. Eng News—Aug. 22, 1912. No. 35399.

Theory of Reinforced Concrete Joists. John L. Hall. Discusses the things that should be considered in computing the strength of a system of joints. 2500 w. Pro Am Soc of Civ Engrs—Oct., 1912. No. 37150 F.

Moments and Arch Action in Continuous Reinforced Concrete Beams and Slabs. Eli White. Gives a method of solving problems involving continuous beams and slabs. Diagrams. 2000 w. Eng Rec—Sept. 28, 1912. No. 36404.

Calculations on Reinforced Concrete Beams (Note sur le Calcul des Poutres en Béton Armé). M. Hachon. Studies on beams under compression when the neutral fibre falls within the beam. 4800 w. Ann des Ponts et Chaussées—Jan.-Feb, 1912. No. 32078 E + F.

Comparative Tests of Some Reinforced Concrete Columns. Abstract of a thesis by F. W. Ullius, assisted by H. E. Pulver and L. E. DeQuine. Ills. 1000 w. Wis Engr—Jan., 1912. No. 30046 C.

Reinforced Concrete Stresses. Ernest McCullough. Discusses permissible unit stresses and the practice of using stresses in excess of those generally permitted. 3500 w. Eng News—Jan. 4, 1912. No. 29387.

Tests on Reinforced Concrete (Proeven op betonijzer). H. F. Streif and E. Jacobs. Results of loading tests on various methods of reinforced beams. 3000 w. De Ingenieur—Dec. 30, 1911. No. 29772 D.

Calculations on Reinforced Concrete Beams (Calcul des Poutres en Ciment Armé). M. Pigeaud. Mathematical studies of their properties. 12000 w. Ann des Ponts et Chaussées—Nov., 1911. No. 30597 E + F.

Deflection of Reinforced Concrete Beams (Die Berechnung der Durchbiegung von Eisenbetonbalken). G. Kaufmann. Mathematical discussion. 2700 w. Beton u Eisen—Jan. 3, 1912. No. 30555 D.

Beam Tests (Balkenversuche). F. v. Emperger. Discussion on the calculation for reinforcement spacing in reinforced concrete beams. 1800 w. Beton u Eisen—Feb. 2, 1912. No. 30560 D.

Shearing Stresses in Concrete Steel Beams. Hector R. Burroughs. Investigates the actual practical utility of stirrups. 1000 w. Eng Rec—March 23, 1912. No. 31486.

The Strength of Reinforced Concrete Beams; Results of Tests of 333 Beams. (First Series.) Richard L. Humphrey and Louis H. Losse. Tests on the behavior of reinforced concrete beams under load, as influenced by the character of the concrete, arrangement and percentage of reinforcement. Ills. 200 pages. Bull Bur of Standards, June 27, 1911. No. 32290 N.

Calculations on Compound Columns (Zur Berechnung der Verbundsäulen). O. Domke. Amendments suggested to the formulas worked out by Dr. von Emperger on beams. 1700 w. Beton u Eisen—Feb. 26, 1912. No. 31352 E.

Calculations on Continuously Loaded Reinforced Concrete Beams, with Particular Reference to Vaults (Berechnung kontinuierlicher Eisenbetonträger mit Rücksicht auf die Wirkung der Vouten). A. Strassner. Mathematical discussion. Serial. 1st part. 2100 w. Beton u Eisen —Dec. 14, 1911. No. 29728 E.

The Performance of Fixed or Continuous Reinforced Concrete Beams under the Eichholz System for Constructing with Increasing Pressure Dimension (Die Ausführung des eingespannten oder kontinuierlichen Eisenbetonträgers mit wechselndem Druckgurt nach dem System Eichholz). Herr Schellnegger. Experiments showing that a load is taken care of by increased size of beam, when distance from support increases. Ills. 3600 w. Beton u Eisen—April 20, 1912. No. 32712 E.

Continuous Beams with Fixed Supports (Kontinuierliche Träger mit fester stutzenlagerung). W. Frank. Mathematical discussion concerning the design of reinforced concrete walls, etc. Ills. 3900 w. Beton u Eisen—July 20, 1912. No. 35523 E.

See also Concrete Tests, under *Materials of Construction.*

Reinforced Concrete Columns

Calculations for Tubular Columns of Reinforced Concrete (Le calcul des poutres tubulaires en ciment armé). Mathematical discussion on both the longitudinal and latitudinal bearing strengths. Diagrams. 2500 w. Génie Civil—June 15, 1912. No. 34584 D.

A Loading Formula for Hooped Reinforced-Concrete Columns. Examines steps affecting the factors of safety and develops formula. 2000 w. Eng News—Aug. 1, 1912. No. 35046.

Dimensioning Circular Cross-Sections of Reinforced Concrete Columns (Die Dimensionierung von Eisenbetonquerschnitten mit kreisförmigen Begrenzungslinien). J. Krebitz. Formulas for the determination of moments in circular columns. Diagrams. Two Parts. Part I. 4500 w. Beton u Eisen—July 20, 1912. No. 35524 E.

Recent Constructions of Reinforced Concrete for the Würtemberg Railway Administration (Neuere Bauausführungen in Eisenbeton bei der württembergischen Staatseisen-bahnverwaltung). K. W. Schaechterle. Describes the theory and design of column construction for bridges, with examples. Ills. 4000 w. Beton u Eisen—July 20, 1912. No. 35519 E.

See also Reinforced Concrete Beams, under *Materials of Construction.*

Reinforced Concrete Slabs

Simplified Methods of Calculating Reinforced Concrete Floor-Slabs. Richard Coulson. Gives a simple method of obtaining the thickness, the superload and span being given. 500 w. Engng—Dec. 29, 1911. No. 29616 A.

Analyses for Moments in Three Types of Reinforced Concrete Floors. S. Ingberg. Mathematical. 4500 w. Engng & Con—Jan. 3, 1912. No. 29377.

Experiments on the Strength of Plain and Reinforced Concrete Slabs. Stephen Mitchel Dixon and Percy William Villiers. Describes experiments carried out to obtain practical information as to the transverse strength of such slabs. 500 w. Inst of Civ Engrs—No. 3940. No. 29968 N.

Timber Floors on a Skeleton Frame of Reinforced Concrete. Francis W. Wilson. Describes a type of construction aiming to combine the good points of concrete factory building construction and the wood floors of mill construction Ills. 2500 w. Cement Age—Feb., 1912. No. 30759 C.

Measurements of Stresses in Floor Systems of Reinforced Concrete Buildings. Extracts from a report presented by A. N. Talbot to the Nat. Assn. of Cement Users. Describes tests made in the Wenalden Building, Chicago. 2500 w. Eng Rec—March 23, 1912. No. 31482.

Tests of a Reinforced Concrete Flat Slab Building Floor to Determine Actual Stresses. From a paper by W. K. Hatt, before the Indiana Engng. Soc. A summary of recent tests. 2000 w. Engng & Con—March 13, 1912. No. 31180.

A Method of Analyzing Radially Reinforced Flat Slabs. S. E. Slocum. Gives the chief features in the design and analysis of stress for this method of reinforcement. 2000 w. Eng News—April 18, 1912. No. 32210.

Analytical Tests of Beam and Girder Floors. Report of the Committee on Reinforced Concrete of the Nat. Assn. of Cement Users, presenting tests made on actual buildings under load, with discussion of methods of testing. Ills. 5000 w. Cement Age—April, 1912. No. 32299.

The Practical Design of Reinforced Concrete Flat Slabs. Sanford E. Thompson. Read before the Nat. Assn. of Cement Users. Considers the designing of flat slab floors for reinforced concrete structures. 3000 w. Can Engr—March 28, 1912. Serial. 1st part. No. 31681.

See also Floors, under *Construction.*

Reinforcing

Some Methods of Laced Reinforcing (Einige Anwendungen des umschnürten Betons). Fr. Boerner. Description of the Abramoff-Magid system of coiled wire to be stretched over rods. Ills. Serial. 1st part. 1650 w. Beton u Eisen—Nov. 27, 1911. No. 28881 E.

Experiments with Laced Cast Iron Reinforcing (Versuche mit umschnürtem Gusseisen). Dr. v. Emperger. Presents data of tests of concrete columns with different degrees of laced reinforcement. Ills. Serial. 1st part. 2200 w. Beton u Eisen—Feb. 2, 1912. No. 30558 D.

Calculations for Double-Reinforced Construction (Die Berechnung von doppelt bewehrten Konstructionen). L. Landmann. Mathematical discussion especially considering double reinforcing in concrete beams and columns. 5600 w. Beton u Eisen—May 28, 1912. No. 33549 E.

Tensile Tests of Splices of Reinforcing Bars, Used in Washington Street Tunnel, Chicago. Illustrates and describes the methods of testing and states conclusions. 1000 w. Engng & Con—July 10, 1912. No. 34418.

Concrete Reinforcement (Beton-Einlageisen). Otto Greger. Reviews the specifications for reinforcing outlined by the Minister of Public Works. Diagrams. Serial. 1st part. 1600 w. Oest Zeit f Berg u Hütten—July 20, 1912. No. 35505 D.

The Question of Reinforcing in Concrete Construction and Recent Rules (Die Verbundfrage im Eisenbetonbau und die neueren Vorschriften). A. Kleinlogel. Mathematical discussion on modern practice. Diagrams. 2800 w. Zeit d Oest Ing u Arch Ver—Aug. 23, 1912. No. 36168 D.

Economy in Reinforced Concrete Construction (La Economiá en los Proyectos de Construcciones de Cemento Armado). A. C. Pugnali. Discussion of economical arrangement of reinforcement. 6000 w. Anales d l Soc Cien Argentina—Feb., 1911. No. 28511 N.

Sands

A Proposed Study of Concrete Sands. John R. Freeman. Calls attention to the peculiar behavior of certain kinds of sand and urges a thorough scientific investigation. Also editorial. 4500 w. Eng News—May 30, 1912. No. 33321.

Testing Sand for Use in Concrete and Cement Mortar. Cloyd M. Chapman. Outlines methods in use in the Westinghouse, Church, Kerr & Co. laboratory. 3000 w. Cement & Eng News—Sept., 1912. No. 36016.

Testing Sand for Use in Concrete and Cement Mortar. Cloyd M. Chapman. Outlines the method used in the laboratory of Westinghouse, Church, Kerr & Co. 3000 w. Eng Rec—April 27, 1912. No. 32390.

Sandstone

Report of Commission on Lime Sandstone (Verslag van de commissie tot onderzoek van Kalkzandsteen). J. Van Hasselt. Investigations on the properties of this material. 3200 w. De Ingenieur—Dec. 2, 1911. No. 29770 D.

Sand-Washing

Improved Sand-Washer. Illustrated description of a filter-bed sandwashing plant devised by William Polglase. 1200 w. Engr, Lond—Feb. 16, 1912. No. 30808 A.

Specifications

American Society for Testing Materials. Report of the 13 new and 8 revised iron and steel specifications proposed at the last meeting. 4000 w. Ir Age—April 4, 1912. No. 31764 C.

Steel

Notes on Structural Steel Designs. Albert Reichmann. Considers features that should be investigated in designing steel structures. General discussion follows. 10000 w. Jour W Soc of Engrs—Feb., 1912. No. 31196 D.

Tests of Wrought-Iron Girders—A Study. Frank P. McKibben. Illustrated description of unusual tests made at the Fritz laboratory to show the behavior of large bridge girders under stress. 4500 w. Eng Rec—Aug. 24, 1912. No. 35423.

Notes on the Design of Girder and Truss Spans and Trestle Work in Structural Steel. Abstract of a lecture by F. W. Dencer, before the Civil Engng. Soc. of Valparaiso University. Discusses details of designs. 4500 w. Engng & Con—Sept. 4, 1912. No. 35799.

The Design of Girder and Truss Spans and Trestle Work in Structural Steel. Abstract of a paper by F. W. Dencer before the Civil Engng Soc. of Valparaiso Univ. Deals principally with designs for the most practical details, showing that many can be simplified without impairing their strength. 5000 w. Can Engr—Sept. 26, 1912. No. 36379.

Stone

Atmospherical Deterioration of Building Stone on the Cologne Cathedral and Elsewhere. J. A. van der Kloes. Describes the forces at work, the effect of mortar and other causes of deterioration. 4000 w. Quarry—Jan., 1912. No. 29604 A.

The Mechanical Preparation of Industrial Stone (Le Travail mecanique de la Pierre dans l'Industrie). Jean Escard. A series which is to cover the entire subject of the preparation of stone for all purposes; sawing, perforating and polishing. This first part discusses hand and circular saws. Ills. 14400 w. Rev de Mecan—July 31, 1912. No. 35579 E + F.

Stucco

Metal Lath in Residence Construction. H. B. McMaster. Explains the advantages of this material in stucco construction and comparative costs. 1200 w. Cement Age—May, 1912. No. 33099 C.

Methods and Costs of Applying Stucco with the "Cement Gun." R. C. Hardman. Gives methods and cost of recent work. 1200 w. Eng News—Aug. 22, 1912. No. 35397.

See also Cement, under *Construction.*

Terra Cotta

Terra Cotta as a Building Material. Samuel Howe. Gives illustrations showing uses made of this material, and information relating to its early workers. 1000 w. Am Archt—Nov. 1, 1911. No. 27684 C.

Architectural Terra Cotta Construction. Edward H. Putnam. Explains the limitations and advantages of this building material. Ills. 1000 w. Am Archt—Nov. 15, 1911. Serial. 1st part. No. 28050 C.

The Manufacture of Terra Cotta for Building Purposes (La cuisson des terres cuites de batiment). M. F. Wattebled. Description of the process. Diagrams. 9000 w. Bull Soc d'Encour—May, 1912. No. 34576 E + F.

Timber

Strength Values for Structural Timbers. McGarvey Cline. Gives results of tests made by the U. S. Forest Service. 1500 w. U S Dept of Agri, Circ 189—Jan. 25, 1912. No. 30912 N.

Tests of Structural Timbers. McGarvey Cline, and A. L. Heim. Report of tests made by the U. S. Forest Service on structural timbers, exclusive of round timbers and other special forms. Ills. 123 pps. U S Dept of Agri, Bul. 108—Sept. 28, 1912. No. 36698 N.

Timber Testing in the Forest Products Laboratory. Harold R. Winter. An account of research work as carried out by the Forest Service of the U. S. Department of Agriculture in co-operation with the University of Wisconsin. Ills. 3500 w. Jour Worcester Poly Inst—March, 1912. No. 31584 C.

Tests on the Elasticity and Strength of Bamboo, Acacia, Ash and Hickory Timbers (Versuche über die Elastizität und Festigkeit von Bambus, Akazien-, Eschen- und Hickoryholz). R. Baumann. Description of testing methods employed and results obtained. Ills. 3300 w. Zeitschr des Ver deutscher Ing—Feb. 10, 1912. No. 31359 D.

Microphotographs of the Structure of Wood. Studies of wood structures, explaining the difficulties, the success of an expert and the results obtained by such study. Ills. 1500 w. Wood Craft—July, 1912. No. 34236.

Varying Characteristics of the Same Woods. Samuel J. Record. On the distinctive differences in woods and their recognizable features. 1500 w. Wood Craft—July, 1912. No. 34235.

The Hard Wood Timbers of New South Wales. Information concerning tests carried out between 1907 and 1910. Ills. 2500 w. Engng—Sept. 6, 1912. No. 35997 A.

Characteristics Employed in the Identifying of Wood. C. D. Mell. Considers peculiar features most useful in accurate identification. 1500 w. Wood Craft—Dec., 1911. No. 28629.

Longleaf Pine — A Great Structural Timber. W. M. Hall and H. Maxwell. Extract from U. S. Bul. of the Forest Service, showing the value of these timbers for structural purposes. 4500 w. Cassier's Mag—Nov., 1911. No. 28187 B.

The Prevention of Sap Stain in Lumber. Howard F. Weiss and Charles T. Barnum. Considers the causes, reports experiments with results and costs. Ills. 4000 w. U S Dept of Agri, Forest Service, Circ 192. No. 28383 N.

Rapid Destruction of Timber Beams from Dry Rot. From data collated by C. H. Smith and F. J. Hoxie for the Asso. Factory Mut. Fire Ins. Cos. Ills. 4000 w. Eng News—Dec. 21, 1911. No. 29115.

Free Use of Timber From Public Lands. T. D. Woodbury. Gives the amendatory acts controlling such use, with explanations. 2500 w. Min & Sci Pr—June 15, 1912. No. 33850.

Timber Expansion in Flumes; Causes and Remedies. Godfrey Sperling. From Trans. of Am. Met. Soc. Describes the longitudinal expansion of some flumes constructed in 1910 in Idaho. 1400 w. Min & Engng Wld—March 16, 1912. No. 31233.

Wood Distillation: 1910. Information from the Federal annual report on the statistics of forest products. 900 w. Bureau of Census—Dec. 20, 1911. No. 31288 N.

Veneers: 1910. Information from the annual Federal report on the statistics of forest products. 1000 w. Bureau of Census—Dec. 20, 1911. No. 31287 N.

Pulp-wood Consumption: 1910. Information from the annual Federal report on the statistics of forest products. 2500 w. Bureau of Census—Dec. 20, 1911. No. 31286 N.

Wood-Using Industries and National Forests of Arkansas. Part I. Uses and Supply of Wood in Arkansas. J. T. Harris and Hu. Maxwell. Part II. Timber Resources of the National Forests in Arkansas. Francis Kiefer. 40 pages. U S Dept of Agri, Bul. 106. No. 33184 N.

Our Forest Fires. T. M. Prudden. Brief account of methods of fighting forest fires, and of their prevention. Ills. 2000 w. Yale Sci M—Feb., 1912. No. 30849 C.

Watching for and Preventing Forest Fires. Day Allen Willey. Illustrated description of the work of the Forest Service in protecting standing timber. 1800 w. Sci Am—Jan. 13, 1912. No. 29542.

The Railways' Interest in Forest Fire Prevention. E. A. Sterling. A discussion of the forest fire problem and the responsibility of railways. Ills. 4000 w. Ry Age Gaz—Feb. 9, 1912. No. 30359.

The Attitude of the Railways Toward Forest Fires. E. A. Sterling. Read before the Can. Forestry Assn. Brief account of what the railroads are doing to prevent fires, with the recommendations for fire control passed as resolutions at Portland, Ore., Forest Fire Conference. 3000 w. Can Engr—Sept. 5, 1912. No. 35821.

$30,000,000 in Wood Wastes. F. P. Veitch and M. G. Donk. From Bul. 144, Bureau of Chem., Dept. of Agri. (U. S.). On the utilizing of waste wood from the lumber industry of the South and the Northwest. 3500 w. Mfrs' Rec—March 21, 1912. No. 31448.

See also Timbering, under MINING AND METALLURGY, *Miscellany*.

Timber Preservation

The Decay and Preservation of Timber. William Ransom. The present number deals with causes of decay. 1000 w. Surveyor—Jan. 26, 1912. Serial. 1st part. (Special.) No. 30310 C.

The Development and Status of the Wood Preserving Industry in America. E. A. Sterling. Read at Int. Cong. of Ap. Chem. 2200 w. Ry Age Gaz—Oct. 18, 1912. No. 36888.

The Ageing and Preservation of Timber (Le Vieillissement et la Conservation du Bois). J. Chaussin. Discusses processes which assist in the ageing of wood and act as preservatives. 2400 w. Rev. Industrielle—July 20, 1912. No. 36178 D.

The Preservation of Mine Timbers. E. W. Peters. Discusses investigations made to determine suitable methods of treating timber, and the durability of treated and untreated timber in service. Ills. 27 pages. U S Dept of Agr', Bul 107—May 31, 1912. No. 33799 N.

Wood Preservation. James D. MacLean. Brief discussion of the processes and problems. 2500 w. Wis Engr—April, 1912. No. 32410 C.

A Visual Method for Determining the Penetration of Inorganic Salts in Treated Wood. E. Baleman. Brief description. 600 w. Ry Age Gaz—March 15, 1912. No. 31216.

Commercial Creosotes, with Special Reference to Protection of Wood from Decay. Carlisle P. Winslow. Information concerning the more important sources of wood preserving creosotes, the methods used in their production, etc. 5500 w. U S Dept of Agri, Circ 206—July 18, 1912. No. 34832 N.

Creosote Specifications and Analysis. S. R. Church. Abstract of an address before the Wood Preservers' Assn. Considers the principal specifications in use in the United States, their origin and value. 3000 w. Ry Age Gaz—Feb. 16, 1912. No. 30457.

Creosoted Wood Blocks for Purposes Other Than Street Pavement. E. A. Sterling. Briefly considers locations where wood blocks could be used as flooring. 1600 w. Ry Age Gaz—Sept. 20, 1912. No. 36076.

Port Reading, N. J., Creosoting Plant. Illustrated description of this timber treating plant of the Philadelphia & Reading and Central of New Jersey. 2500 w. Ry Age Gaz—July 19, 1912. No. 34670.

The New Port Reading Creosoting Plant. Illustrated detailed description of plant with finishing mills for ties and bridge timber. 3000 w. Eng Rec—Aug. 10, 1912. No. 35119.

Aczol: A New Preservative Material for Timber. William Manktelow. Information concerning a patent compound of metallic ammoniates, with an antiseptic acid having no deleterious action on wood or metals. 1500 w. Elec Rev, Lond—June 28, 1912. No. 34807 A.

The Zernsdorf Tie Impregnation Plant (Die Schwellentränkanstalt Zernsdorf). Herr Matthaei. Description of plant and the methods of treatment. Ills. Serial. 1st part. 5500 w. Glasers Ann—Apr. 1, 1912. No. 32033 D.

Timber Impregnation with the Zinc-Chloride, Sodium-Fluoride Process and the Bellit Process. (Zur Holzimprägnierung mit Chlorzink-Fluornatrium und Bellit) Basileus Malenkoric. A resumé of the value of preservative treatments and brief description of the two processes including sodium fluoride. 4000 w. Elek u Masch—Sept. 15, 1912. No. 36649 D.

The Injection of Posts and Ties by the Reuping Process at Zernsdorf (L'injection des Poteaux et des traverses par le procédé Rüping, à Zernsdorf, Prusse). Describes plant, and illustrates method of injection followed there. 2500 w. Genie Civil—Sept. 21, 1912. No. 36681 D.

See also Timbering, under MINING AND METALLURGY, *Mining;* and Ties, under RAILWAY ENGINEERING, *Permanent Way and Buildings.*

Timber Waste

How We Can Utilize $250,000,000 Worth of Wasted Timber. An illustrated account of the development of a new American industry, and the uses made of this material. 2500 w. Sci Am—June 15, 1912. No. 33714.

Wood Substitutes

Some Refractory Substitutes for Wood. Abstract of a paper by Charles L. Norton. Considers attempts to preserve wood by chemical treatment and describes a material called asbestos wood. Discussion. Ills. 2200 w. Jour Am Soc of Mech Engrs—March, 1912. No. 31566 D.

Woodwork

Woodworking Plant of the Brown Auto Carriage Company. The equipment and methods for making of automobile bodies. Ills. 2500 w. Wood Craft—Dec., 1911. No. 28628.

MEASUREMENT

Accelerometer

The Wimperis Accelerometer and Equilibristat. H. E. Wimperis. Illustrated description of the pocket form and the recording form of instrument. 1100 w. Bul Int Ry Cong—Jan. 1912. No. 30129 G.

Air Pressure

Air Pressure on Inclined Plane Surfaces. A. W. Johns. Reviews experimental results obtained with plane surfaces inclined to the direction of motion. 5000 w. Engng—Jan. 5, 1912. No. 29676 A.

Areas

The Calculation of Areas. H. G. Henderson. Gives short methods of determining areas from maps, with special reference to areas of irregular outline. 2500 w. Mines & Min—Sept., 1912. No. 35699 C.

See also Irrigation, under *Water Supply.*

Arithmetical Mean

Application of the Arithmetical Mean. Julian C. Smallwood. Considers its application to engineering observations and some of the errors resulting from its indiscriminate use. 800 w. Power—March 12, 1912. No. 31122.

Beams

Analysis for Moments in Continuous Beams of Non-Uniform Section. S. Ingberg. Mathematical. 2000 w. Engng & Con—Jan. 17, 1912. No. 29829.

Cement Tests

The Need of a More Severe Soundness Test for Cement. Henry S. Spackman. Presents the necessity of guarding against danger through latent power of expansion lying in the coarser particles of clinkers generally found in cement. Refers also to H. J. Force's paper on the same subject. 3000 w. Eng News—July 11, 1912. No. 34408.

See also Cement, under *Materials of Construction.*

Clay Testing

The Testing of Clay Refractories, with Special Reference to Their Load Carrying Capacity at Furnace Temperatures. A. V. Bleininger and G. H. Brown. Deals with refractoriness or fire clays and their viscosity at furnace temperatures. Ills. 78 pages. Bureau of Stand, Tech. paper No. 7—Dec. 15, 1911. No. 33172 N.

Concrete Testing

Low-Cost Testing Machines for Concrete Beams and Slabs. Ernest McCullough. Drawings and description, with reports of improvement in the uniformity of the product. 1200 w. Eng News—July 25, 1912. No. 34791.

Current Meters

Measuring and Recording Devices for Irrigation Systems. W. G. Steward. Illustrates and describes current meters, canal gages, weir gages, automatic registers, etc. 1500 w. Eng News—Aug. 29, 1912. No. 35644.

The Current Meter Rating Station at the Irrigation Office, Department of the Interior, Alberta. F. H. Peters. illustrates and describes the construction of a permanent station for current meter rating. Plates. 3000 w. Can Soc of Civ Engrs—Oct. 10, 1912. No. 37059 N.

A Recording Current Meter. Charles Lane Poor. Illustration and brief description of a current recorder for measuring and recording the velocity and direction of currents. 1200 w. Yale Sci M—Feb., 1912. No. 30852 C.

Measurement of Water, Means Available and Their Relative Accuracy. Gardner S. Williams. Considers methods and devices used. 6500 w. Jour W Soc of Engrs—Jan., 1912. No. 30814 D.

Special Venturi Meters at the Wachusett Dam. E. R. B. Allardice and F. N. Connet. Illustrated description of meters and recording instruments. 1000 w. Eng News—Feb. 15, 1912. No. 30435.

The Woltmann Water Meter (Ueber Woltmann-Wassermesser). L. Arndt. A new type of meter for measuring the velocity of the current. Ills. 2500 w. Oest Wochenschr f d Oeff Baudienst—Jan. 11, 1912. No. 30551 D.

How the Flow of Water Through the Catskill Aqueduct Will Be Measured. Illustrated description of the three largest Venturi meters ever constructed, and apparatus for making continuous records of the flow. 1500 w. Eng Rec—Jan. 20, 1912. No. 29844.

The Effect of Meters Upon Water Consumption. Edward W. Bemis. Considers how much restriction in consumption may be expected from a meter system and the checking of waste. 5000 w. Eng Rec—Dec. 2, 1911. No. 28525.

Units of Measurement of Irrigation Water and Methods of Measuring Water. Summary of a discussion by B. A. Etcheverry in a report on "Irrigation in British Columbia." Ills. 4500 w. Engng & Con—Sept. 25, 1912. No. 36353.

Some Things Domestic Meters Do Not Accomplish. William S. Johnson. Also discussion. Need of studying conditions and the water unaccounted for. 5000 w. Jour N Eng W-Wks Assn—March, 1912. No. 32354 F.

Water Meters, Mains and Service Pipes from the Financial Standpoint. Willis J. Spaulding. From a paper before the Ill. San. and Water Supply Assn. Reports results of metering the service, the necessity of testing the meters, rate, extensions, and other financial points are considered. 2000 w. Munic Engng—

Water-Measuring Device. R. G. Hosea. Drawings and description of an instrument used to measure the flow over a 12-foot weir with full contractions. 1200 w. Eng Rec—Sept. 21, 1912. No. 36062.

Drafting

Sunshine and Shadow. J. R. Hoffert. Deals with the determination of the shadow lines of buildings. Ills. 1200 w. Cornell Civ Engrs — June, 1912. No. 34014 C.

Some Puzzles in Steelwork Details. Hart Vance. Gives sketches illustrating two cases of curious developments in the drafting room. 700 w. Eng News—Aug. 22, 1912. No. 35398.

Drain Tile Testing

A Method of Making Tests on Drain Tile Prof. A. N. Talbot and D. A. Abrams. Read before the Nat. Assn. of Cement Users. Illustrated description of a machine designed for such tests. 2000 w. Eng Rec—April 6, 1912. No. 31823.

Earth

The Shape of the Earth (La Forme de la terre). C. Francois. Description of the determination of the area of the earth, etc. 6500 w. Bull Sci d l'Assoc d'Elères—Oct., 1911. No. 28506 D.

Flexure

Faults in the Theory of Flexure. Henry S. Prichard. A study of the nature and influence of the faults of the theory. Ills. 6000 w. Pro Am Soc of Civ Engrs—March, 1912. No. 32131 F.

Faults in the Theory of Flexure. Discussion of Henry S. Prichard's paper. 45000 w. Pro Am Soc of Civ Engrs—May, 1912. No. 33224 F.

Faults in the Theory of Flexure. Continued discussion of Henry S. Pritchard's paper. 6000 w. Pro Am Soc of Civ Engrs—Aug., 1912. No. 35632 F.

Flow

A Theoretical Formula for the Curve Resistance to the Flow of Liquids. Philip J. Markmann. Read before the St. Louis Engrs. Club. Critical remarks on the paper by Messrs. Williams, Hubbell and Fenkell, with the development of a theoretical equation for the curve resistance to the flow of liquids. 4000 w. Can Engr—Nov. 2, 1911. No. 27743.

A Formula and Diagram for Determining the Velocity of Flow in Ditches and Canals. Clarence T. Johnston and R. D. Goodrich. Diagram with explanation. 800 w. Eng Rec—Nov. 4, 1911. No. 27716.

Investigations of Flow in Brick Lined Conduits. John Ericson. Experiments to determine the hydraulic elements in connection with the flow of water in the Northwest Land and Lake Tunnel System, Chicago, Ill. Plates & Ills. 13000 w. Jour W Soc of Engrs—Oct., 1911. No. 28242 D.

The Movement of Liquids (Alcune nuove riserche sul moto dei liquidi reali). P. Albrandi. Mathematical discussion on the measurement of flow. 11500 w. Ann. della Soc. d. Ing. e. d. Arch. Ital—Sept. 15, 1911. No. 28503 E.

The Flow of Water Through a Porous Medium. L. R. Balch. Considers the conditions which influence the rate of flow as shown by previous experiments. 1500 w. Wis Engr—April, 1912. No. 32412 C.

Deformation Resistance, Tangential Cohesion and Friction in the Flow of Liquids (Deformationswiderstand, tangentiale Kohäsion und Reibungswiderstand von Flüssigkeiten). M. Reiner. The hydrodynamic theory of friction applied to the flow of oils. 2500 w. Zeit d Oest Ing u Arch Ver—Dec. 22, 1911. No. 29753 D.

See also Stream Gauging, under *Measurement.*

Geology

Study of the Earth's Crust by Electric Waves (Systematische Erforschung des Erdinnern mittels elektrische Wellen). H. Löwy. States method of such investigations and the determination of what is found. Ills. Serial. 1st part. 2800 w. Oest Zeit f Berg- u. Hüttenwesen—Nov. 18, 1911. No. 28825 D.

Hydraulic Formulae

Some of the Inexact Hydraulic Formulae (Sur Quelques Formules Inexactes de l'Hydraulique). D. Banki. Mathematical discussion showing the cause of inexactness in some formulae, and how they can best be approximated without causing errors. Ills. 8400 w. Rev de Mecan—Feb., 1912. No. 32087 E + F.

The Present Standing of Hydraulic Science (Der gegenwärtige Stand der Hydraulik). Prof. A. Budau. Reviews some of the more recent hydraulic theories. Ills. and plate. Serial. 1st part. 2800 w. Zeit d Oest Ing u Arch Ver—Mar. 29, 1912. No. 32055 D.

Hydrography

The Bear Creek Hydrographic Survey, British Columbia. Francis Robert Johnson. An account of this survey in a mountainous district. 3000 w. Inst of Civ Engrs—No. 3957. No. 37083 N.

A Simple Method of Plotting Soundings in Hydrographic Surveys. R. R. Raymond. A geometrical solution of the three-point problem, found useful for plotting the positions of soundings. 1000 w. Eng News—Sept. 26, 1912. No. 36362.

The Law of Reciprocity in the Movement of Water (Principio di reciprocità nei moti regolari dell'acqua). U. Puppini. A mathematical discussion of the relation of this law to hydraulics. Serial. 1st part. 4800 w. Monit Tec—Nov. 10, 1911. No. 28897 E.

Hydrology and Hydrography in Hungary (Hydrologie und Hydrographie in Ungarn). C. Grünhut. Rain distribution and stream measurement throughout the country. Maps and ills. Serial. 1st part. 2700 w. Oest Wochenschr f d Oeff Baudienst—Nov. 2, 1911. No. 28839 D.

Impact

A New Impact Formula. Gustav Lindenthal. From the Rules of Design and Dimensioning Bridges on the New York Connecting R. R. Explains the derivation of the new formula. 3500 w. Eng News—Aug. 1, 1912. No. 35045.

Irrigation Chart

A Pumping and Irrigation Chart. S. N. Arnold. Gives a chart developed to facilitate calculations, explaining its use. 2000 w. Eng News—Dec. 21, 1911. No. 29119.

Laboratories

The Function of the Laboratory in the Training of an Engineer. E. W. Marchant. Read before the Liverpool Engng Soc. Discusses the value of laboratory training and its limitations. 3000 w. Mech Engr—June 14, 1912. No. 33932 A.

Engineering Laboratories at Liverpool University. Describes the new building and its equipment. 1500 w. Engr, Lond—May 17, 1912. Serial. 1st part. No. 33278 A.

The Harrison-Hughes Engineering Laboratories at Liverpool University. Illustrates and describes these new laboratories and their equipment. 4000 w. Mech Engr—May 24, 1912. No. 33452 A.

The Murray Laboratory of Mining Engineering, Halifax, Nova Scotia. F. H. Sexton. From an official report. Description of the building and its equipment. 2500 w. Can Min Jour—June 15, 1912. No. 33853.

The Activity of the Imperial Testing Bureau in the Year 1910 (Die Tätigkeit des Königlichen Materialsprüfungsamtes zu Berlin im Jahre 1910). Outline of the lines of work during the year. 3300 w. Zeit f Werkzeug—Dec. 5, 1911. No. 29747 D.

The New Hydraulic Experimental Laboratory at Santhia (La nuova stazione idrometrica sperimentale di Santhià). Description of buildings and apparatus. Ills. 6600 w. Monit Tec—Dec. 10, 1911. No. 29811 D.

See also same heading, under CIVIL ENGINEERING, *Construction.*

Manometers

The Theory of the Manometric Tube (Théorie du Tube Manometrique). M. H. Lorentz. Mathematical description of the theory of operation. Ills. 4000 w. Rev de Mécan—Nov., 1911. No. 29775 E + F.

Mathematics

A Study of Diophantus (Etude sur Diophante). G. Milhaud. A study in the history of Greek algebra. 3600 w. Rev Gen des Sciences—Oct. 15, 1911. No. 28486 D.

Photo-Surveying

Stereographic Measurement. G. R. Anderson. Discusses the use of photographs in surveying, dealing with the question of measurement only. 1500 w. Can Engr—March 28, 1912. No. 31680.

Stereographic Measurement. G. R. Anderson. On the use of photographs in surveying, discussing the problem of deducing measurements. Ills. 1500 w. Ap Sci—May, 1912. No. 33645 C.

Stereo-photogrammetric Measurement. (Die stereophotogrammetrische Messmethode). O. Walter. Describes apparatus and process, whereby distances and altitudes may be determined by photographs from two points on a known base-line. Ills. Serial. 1st part. 3300 w. Schweiz Bau—July 27, 1912. No. 35527 D.

Photo-stereography in Engineering Practice (Die Stereophotogrammetrie und ihre Hilfsinstrumente in der Ingenieurpraxis). L. Arndt. A description of the photo-theodolite and other similar instruments. Ills. Serial. 1st part. Oest Wochenschr f d Oeff Baudienst—Oct. 12, 1911. No. 28438 D.

Photo-topography and Photogrammetry (La Phototopographie et la Photogrammetrie). Paul Helbronner. Applications of photography for the survey of mountainous regions. Ills. 5600 w. Genie Civil—Mar. 9, 1912. No. 32095 D.

See also Photography, under *Miscellany.*

Precise Levelling

Precise Levelling of the Levees of the Tiber. (Livellazione Geometrica di precisione dei muraglioni del Tevere). G. Cassinis. Field notes and methods adopted. 2000 w. Ann della Soc d'Ing e d Arch Ital—Sept. 1, 1911. No. 28479 E.

Railway Profiles

Profiles of Railway Lines from the Atlantic Coast to the Great Lakes. Map, profiles, and notes on their characteristics. Plate. 2000 w. Eng News—Dec. 21, 1911. No. 29120.

Rock Pressure

Rock Pressure (Ueber Gebirgsdruck). E. Wiesmann. Discusses previous article by Prof. Heim, and presents original theories of effects as shown in tunnels and aqueducts. Ills. Serial. 1st Part. 3300 w. Schweiz Bau—Aug. 17, 1912. No. 36170 D.

Rock Testing

The Physical Testing of Rock for Road Building, Including the Methods Used and the Results Obtained. Albert T. Goldbeck and Frank H. Jackson. Ills. 96 pages. U S Dept of Agri, Bul 44. No. 34831 N.

Rolling

Resistance to Rolling. Herbert Chatley. Formulates rules for the practical estimation of rolling resistances. 4500 w. Soc of Engrs—June, 1912. No. 34827 N.

Seismometers

New Seismometers and Artificial Earthquakes. Describes the seismographic equipment and some of the results obtained at the magnetic observatory and earthquake station connected with the Berggewerkschaft at Bochum. Ills. 2500 w. Engng—Jan. 5, 1912. No. 29678 A.

Slide-Rules

Slide-Rules for Stream and Canal Measurement (Rechenschieber für Fluss- und Kanalbau). Dr. Kaumann. A scale for the rapid calculation of velocities, cross-sections, etc., based on the several formulas for such determinations. Ills. 1800 w. Zeit f d Ges Turbinenwesen—Feb. 29, 1912. No. 31810 D.

Specific Gravity Flask

Practical Applications of the Specific Gravity or Moisture Flask. H. Stadler. Aims to show the practical possibilities of the specific gravity flask. 3000 w. Jour Chem, Met & Min Soc of S Africa—Nov., 1911. No. 29651 E.

Standardization

Standardization. Ernest J. Elford. Read before the Inst. of Munic. & Co. Engrs. Refers to engineering standards generally and explains the advantages and bearing on municipal supplies. Discussion. 5500 w. Surveyor—Aug. 9, 1912. No. 35292 A.

Stream Gauging

Flow through Triangular Notches or Weirs. Ralph B. Daudt. Description and summary of tests conducted in the Hydraulic Laboratory at Cornell University. Ills. 2000 w. Cornell Civ Engr—March, 1912. No. 31590 C.

Stream Measurements. Abstract of a report by P. M. Sauder, on the stream measurements in Alberta, Sask., describing methods used. Ills. 7000 w. Can Engr—May 30, 1912. No. 33332.

See also Current Meters and Slide Rules, under *Measurement*, and Weirs, under *Water Supply*.

Streets

The Theoretical Principles of Street Design. Harold V. Hutt. Applies Euler's formula, and considers possible variations from ideal conditions. 3000 w. Engng—July 26, 1912. Serial 1st part. No. 35163 A.

Stresses

The Calculation of Secondary Stresses in Trusses. F. E. Turneaure. Explains the general method of solution, illustrating, by example. 2500 w. Eng News—Sept. 5, 1912. No. 35837.

The Modulus of Elasticity of Thin Flexible Strips. F. H. Hummel. Considers the case of a strip clamped in a horizontal direction at one end and bent under its own weight and a load at the free end in the manner of a cantilever. 3000 w. Soc of Engrs—Aug., 1912. No. 35862 N.

The Strength of Struts. R. V. Southwell. Suggests a method of amending Euler's theory to take account of the new factors introduced by elastic yield. 2000 w. Engng—Aug. 23, 1912. No. 35754 A.

The Distribution of Stress in Certain Tension Members. C. Batho. Describes experiments and tabulates results by strain measurements with the Martens extensometer to determine the distribution of stress. Ills. 8800 w. Can Soc of Civ Engrs—May, 1912. No. 33177 N.

Surveying

The Advantages of Direct Solar Observations for Determination of the Meridian. W. H. Burger. Read before the Ill. Soc. of Engrs. & Survs. Discusses the merits of this method and contrasts its advantage with other methods. 2500 w. Engng & Con—Aug. 7, 1912. No. 35072.

Determination of Meridian. D. J. Browne. Explains a method which permits Polaris observations to be taken at any hour of the night, and offers an easy graphic method of computing the results. 1200 w. Eng & Min Jour—Nov. 11, 1911. No. 27795.

The Relative Advantages of Land Surveying Methods, With Reference to Speed, Accuracy, and Applicability. G. W. Pickels, Jr. Abstract of a paper read before the Ill. Soc. of Engrs. & Survs. Briefly describes and discusses the three methods used, and compares them. 3000 w. Engng & Con—Jan. 31, 1912. No. 30149.

Short-Base Triangulation Methods on Reconnaissance and Exploratory Surveys. D. L. Reaburn. Explains how this method can be used to advantage on rapid surveys. 1500 w. Eng News—July 25, 1912. No. 34794.

The Three-Point Problem in Surveying. W. N. Thomas. Explains seven methods of solution. 1700 w. Surveyor—Sept. 13, 1912. No. 36252 A.

A New Method of Linear Measurement in Underground Workings: Precise, Ordinary and Cursory Methods by Polygons (Eine neue Methode zur Längenmessung, u. zw. Präzisions-, gewöhnlichen und flüchtigen Messung der Polygonseiten des untertägigen Grubenzuges). Franz Köhler. Describes method for sloping shaft measurement. Ills. Serial. 1st part. 3600 w. Oest Zeit f Berg- u Hüttenwesen—June 29, 1912. No. 34562 D.

Retracement-Resurveys—Court Decisions and Field Procedure. N. B. Sweitzer. Explains the method of retracement-resurvey work, which has been carried on in Nebraska for the last few years. 7000 w. Pro Am Soc of Civ Engrs—Jan., 1912. No. 29951 F.

Retracement-Resurveys — Court Decisions and Field Procedure. Discussion of N. B. Sweitzer's paper. 3500 w. Pro Am Soc of Civ Engrs—March, 1912. No. 32137 F.

Retracement-Resurveys — Court Decisions and Field Procedure. Continued discussion of N. B. Sweitzer's paper. 9000 w. Pro Am Soc of Civ Engrs—May, 1912. No. 33222 F.

Notes on a System of Surveying with a Tacheometer. Herbert George Dempster. Describes apparatus developed with the object of reducing the labor in the field, and to enable the field books to be worked out by a mechanical method. Ills. 2000 w. Inst of Civ Engrs, No. 3954—May, 1912. No. 33166 N.

Adjustable Wires for Stadia Surveying. Ernest McCullough. A report of the writer's experience and reasons for using adjustable wires. 2500 w. Eng Rec—May 11, 1912. No. 32810.

A Stadia in Georgian Bay, District of Parry Sound. A. G. Ardagh. From a paper before the Assn. of Ont. Land Survs. Describes methods used on a stadia survey in Ontario. 1500 w. Can Engr—Oct. 10, 1912. No. 36796.

A New Stadia Attachment and Diagram. R. L. McCormick. Illustration, with explanation of the mathematical principles involved, of an instrument devised by the author. 1200 w. Eng News—April 25, 1912. No. 32370.

Precise Levelling in Canada. F. R. Reid. Read before the Ottawa Branch of the Royal Astronomical Soc. Deals with the methods employed by the Geodetic Survey. 5000 w. Can Engr—July 11, 1912. Serial. 1st part. No. 34486.

Topographical Surveys on the Canadian Pacific Railway Irrigation Project. Describes the methods used, giving cost data and results. 4000 w. Eng Rec—Jan. 13, 1912. No. 29594.

Methods and Cost of Making Subdivision on Topographical Survey for Sunnyside Unit, Yakima Project, U. S. Reclamation Service. W. E. Whittier. Describes the work. 8000 w. Engng & Con—June 12, 1912. No. 33703.

Method and Cost of a Topographical Survey of the Preston Beck, Jr., Grant in New Mexico. Vincent K. Jones. 2200 w. Engng & Con—July 31, 1912. No. 35084.

Topographical and Geological Mapping. A. J. Hoskins. Describes the methods and instruments employed in making the survey in the field. 3500 w. Mines & Min—Dec., 1911. No. 28556 C.

The Reconnaissance Survey for the Denver & Rio Grande R. R.: Recollections of an Old-Time Engineer. Augustine W. Wright. 2500 w. Eng News—June 27, 1912. No. 34115.

The Land Survey of the Canal Zone. P. H. Underwood. Describes the more important features of a survey recently completed by the Isthmian Canal Commission. 3000 w. Cornell Civ Engr—April, 1912. No. 32185 C.

The Present Activities of the Coast and Geodetic Survey. O. H. Tittmann. Considers present progress, conditions and problems of this work. Discussion. Ills. 5500 w. Pro Engrs' Club of Phila—Jan., 1912. No. 30823 D.

The Main Levelling of Copenhagen, 1907-8. C. F. V. Boock. The present number explains the bench marks and manner of placing them, the instruments and appliances used, etc. 4000 w. Surveyor—April 12, 1912. Serial. 1st part. No. 32262 A.

Field Surveys for Road Construction. E. L. Griggs. Read at the Am. Road Cong. Describes the methods of making the actual field surveys. 2000 w. Engng & Con—Oct. 16, 1912. No. 36861.

Surveying as Applied to Coal Mining. William Pirie. Considers methods in general practice. 5000 w. Ir & Coal Trds Rev—Nov. 3, 1911. No. 28048 A.

Useful Surveyor's Instrument. Describes an instrument known as the rapid traverser, and its use. Diagrams. 1200 w. Eng & Min Jour—July 13, 1912. No. 34429.

See also Photo-Surveying, under *Measurement*.

Telemetry

See Signalling, under MARINE AND NAVAL ENGINEERING.

Testing Materials

See same heading, under MECHANICAL ENGINEERING, *Measurement*.

Transition Curves

See same heading, under STREET AND ELECTRIC RAILWAYS.

T-Squares

Steel T-Squares and Steel Edges for Drawing Boards. George W. Colles. Explains why the writer considers it the only satisfactory material for fine work. Description. 1000 w. Eng News—Dec. 21, 1911. No. 29113.

Wind Pressure

Wind Pressure Against Inclined Roofs. H. P. Boardman. Describes experiments and discusses results. General discussion follows. Ills. 8800 w. Jour W Soc of Engrs—April, 1912. No. 33111 D.

MUNICIPAL

Accounting

Accounting and Efficiency. Herbert R. Sands. Address before the Int. Munic. Cong. Discusses the value of scientific methods and efficient municipal accounting. 4000 w. Munic Jour—Nov. 1, 1911. No. 27658.

Municipal Revenue Accounts. D. Carl Eggleston. Discusses the handling of this class of records. 1200 w. Jour of Acc—Oct., 1911. No. 27629 C.

Appraisals

The Appraisal of Street Lighting Service. Decision by the Massachusetts Gas and Electric Light Commission in the Worcester street lighting case. 5000 w. Eng Rec—July 27, 1912. No. 34809.

Automobiles

The Automobile in Munic'pal Service. R. W. Hutchinson, Jr. Considers its use as fire apparatus, road repair and building, street sprinklers, sweepers, etc. Ills. 3000 w. Munic Engng—Oct., 1912. No. 36976 C.

Automobiles of Springfield, Mass. Joseph H. Bay. Illustrates and describes motor vehicles used in municipal service. 2500 w. Munic Engng—Oct., 1912. No. 36978 C.

Baltimore's Municipal Motors. Stuart Stevens Scott. Illustrated report of motors used in municipal service. 1200 w. Munic Engng—Oct., 1912. No. 36979 C.

Bridlington

Bridlington and Some of Its Municipal Works and Undertakings. Ernest R. Matthews. Read before the Inst. of Munic. & Co. Engrs. General statistics and descriptions of interest. Ills. 7500 w. Surveyor—July 5, 1912. No. 34464 A.

Budget Exhibits

Budget Exhibits and Municipal Engineering Displays. T. L. Hinckley. Suggestions concerning publicity features of city engineering functions. 2500 w. Eng Rec—Dec. 2, 1911. No. 28526.

Catch Basins

Catch Basins for Sewer Inlets. Gives opinions of a number of city engineers as to desirability of using them. Ills. 22000 w. Munic Jour & Engr—May 2, 1912. No. 32549.

Ceylon

The Sanitation of Colombo, Ceylon. N. C. Myers. Brief description of conditions. 2000 w. Plumb & Dec—Aug., 1912. No. 35137 A.

City Improvements

The Covering of Jones' Falls, Baltimore, Md. Stuart Stevens Scott. Illustrated description of an important improvement in progress. 1200 w. Munic Engng—Sept., 1912. No. 36319 C.

City Planning

Landscape Art and City Design. Malcolm N. Ross. Read before the Arts and Literature Soc., Saskatoon. Discusses the subject of city design, and the recent movement to improve and beautify cities. 3500 w. Can Engr—March 28, 1912. No. 31682.

City Planning. John M. Lyle. Discusses in detail eight principal points to be considered, and the importance of a fixed policy. 4500 w. Ap Sci—March, 1912. No. 31782 C.

Town Planning from an Engineering Aspect. Ernest R. Matthews. Considers town planning in a residential district, and in a manufacturing area. Ills. 5000 w. Soc of Engrs—Oct. 7, 1912. No. 36920 N.

Town Planning. Noulan Cauchon. Read before the Ottawa Br. of the Can. Sec. of C. E. Considers the fitness of engineers for this work and discusses its aims. 2500 w. Can Engr—Nov. 9, 1911. No. 27971.

The Engineer in His Relations to the City Plan. Nelson P. Lewis. Discusses city planning, its advantages, progress made, the responsibility, and general principles governing the work. 10000 w. Pro Engrs' Club of Phila—July, 1912. No. 35347 D.

I. Town Planning: Laying Out New Towns and Cities. W. H. Price. Illustrated discussion of essentials. II. Town Planning in Sheffield. C. F. Wike. An account of recent work. Two papers read before the Inst. of Munic. & Co. Engrs. and discussed together. 13500 w. Surveyor—Aug. 2, 1912. No. 35194 A.

Model Suburbs and Villages and the Housing of the Industrial Classes. Thomas H. Mawson. Discusses town-planning experiments in England and Canada. 6000 w. Ap Sci—Jan., 1912. No. 30019 C.

The Building and Development of a Garden Suburb. Michael Bunney. Extracts from a paper read before the Inst. of San. Engrs. Suggestions for roads and control of building operations. 4500 w. Surveyor—Jan. 12, 1912. No. 29899 A.

How City Planning Bills Are to Be Paid. Nelson P. Lewis. Read at the Boston conference. A discussion of the general principles that should govern the distribution of cost. 4500 w. Eng Rec—June 8, 1912. No. 33622.

The Chicago Plan. Walter D. Moody. An illustrated article explaining the plan for the direction of the future growth of the city, aiming to relieve congestion, facilitate traffic, and conserve the public health, as well as to beautify the city. 2500 w. Munic Engng—Sept., 1912. No. 36317 C.

The Municipal Zone System. B. Antrim Haldeman. Condensed from a paper read at the City Planning Con., Boston. Remarks on the development of this system in Europe and its applicability to the United States. 3000 w. Eng News—Aug. 1, 1912. No. 35047.

The Prize Design for the Capital City of Australia. Plan and description of the proposed city, explaining the natural characteristics considered in the design. 2500 w. Engr, Lond—June 21, 1912. No. 34222 A.

Competition for a Building Plan of the Waidareals in Zurich (Wettbewerb für einen Bebauungsplan des Waidareals in Zürich). Illustrated description of some of the plans presented for this project. 1500 w. Schweiz Bau—May 4, 1912. No. 33521 D.

Competitions for a City Plan in Waidareals in Zürich (Wettbewerb für einen Bebauungsplan des Waidareals in Zürich). Illustrated review of some of the plans submitted. 2500 w. Schweiz Bau—Apr. 27, 1912. No. 32715 D.

A Partial Rearrangement of Klagenfurt (Teilregulierungsplan für Klagenfurt). E. Fasshender. A description of proposed changes in that city. 2000 w. Zeit d Oest Ing u Arch Ver—Oct. 27, 1911. No. 28460 D.

See also Arrangement, under *Roads and Pavements.*

Climbing

Making the Public Work. Reginald Pelham Bolton. A study of the physical burden of climbing in buildings and thoroughfares. 3000 w. Cassier's Mag—April, 1912. No. 31835 B.

Contracts

The Contractor's View of City Contracts and Specifications. C. A. Crane. Extracts from a paper read before the Soc. of Munic. Engrs. of the City of N. Y. Considers some objectionable clauses and discusses the subject generally. 2500 w. Eng News—Nov. 23, 1911. No. 28231.

Drainage

The Calumet Sag Channel of the Sanitary District of Chicago. Map, sections and description of a canal estimated to cost $5,670,000, to be constructed for intercepting the sewage in the Sanitary District of Chicago and diverting it from Lake Michigan. 1500 w. Engng & Con—Dec. 27, 1911. No. 29253.

The Problem of the Main Drainage Canal at Chicago. Information from the report of George M. Wisner concerning the present condition of this waterway and the suggested remedy. Map and diagrams. 3500 w. Eng Rec—Nov. 11, 1911. No. 27958.

Papers Relating to the Application of the Sanitary District of Chicago for Permission to Divert 10,000 Cubic Feet of Water per Second from Lake Michigan. Statements showing the dangers that threaten navigation and allied interests of the Great Lakes and St. Lawrence River. 270 pages. Dept of Marine & Fisheries, Canada—May, 1912. No. 33181 N.

Protest Against Further Diversion of Water from Lake Michigan for the Chicago Drainage Canal. Presented at Washington, March 27, 1912. Map. 6000 w. Can Com of Conservation — May, 1912. No. 33182 N.

Drainage Power Plant at New Orleans. Cecil P. Poole. Illustrated description of a power drainage system made necessary by the low level of the city. 2000 w. Power—March 26, 1912. No. 31513.

Drainage Methods in Santiago de Chile (Rioleeringswerken van Santiago de Chile). G. H. van Mourik Broekman. Detailed description of the drainage and sewage system. Maps and Ills. 3800 w. De Ingenieur—Feb. 17, 1912. No. 31380 D.

See also same heading, under *Waterways and Harbors.*

Drains

English Prize Essay on "Iron Drains and Their Fittings." W. H. Thurston. Considers the actions and forces to be considered in designing. Dom Engng—Sept. 14, 1912. No. 35957.

East Ham, (Eng.)

Municipal Works at East Ham. J. E. W. Birch. Read before the Inst. of Munic. & Co. Engrs. Describes in detail the public works, giving particulars of interest. Also discussion. 8000 w. Surveyor—June 21, 1912. No. 34213 A.

Exmouth, Eng.

Exmouth: A Decade of Progress in a Residential Seaside Town. Samuel Hutton. Read before the Inst of Munic & Co. Engrs. Describes the roads, bridges, sewerage, refuse disposal, waterworks, sea defence, etc. Ills. Short discussion. 5000 w. Surveyor—May 10, 1912. No. 32976 A.

Gas Illuminating

State and Municipal Regulations for the Quality, Distribution, and Testing of Illuminating Gas. The methods employed at present in the United States. 188 pages. Bureau of Standards, Circ. No. 32—April 1, 1912. No. 32297 N.

Incinerators

Water Heating by Garbage Burning. Illustrates and describes types of modern garbage and waste incinerators, explaining their value, efficiency and safety. 2800 w. Met Work—June 21, 1912. No. 33864.

Industrial Wastes

Tannery Sewage Disposal. From a paper by F. A. Loveland, read before the Nat. Assn. of Tanners, describing methods employed in disposing of tannery wastes. 2500 w. Chem Engr—Sept., 1912. No. 36235 C.

Infiltration

Amount of Ground Water Infiltration Into Sewers in Various Cities—Methods of Waterproofing Sewers. Abstracted from discussion of the Nat. Assn. of Cement Users. 3300 w. Engng & Con—Dec. 27, 1911. No. 29257.

Municipal Power

See same heading, under ELECTRICAL ENGINEERING, *Generating Stations.*

Municipal Work

Ten Years of Municipal Work in Nuneaton, Eng. Reviews the development during the past decade, showing the great amount of work accomplished. Ills. 7000 w. Surveyor—May 17, 1912. Serial. 1st part. No. 33269 A.

Lowestoft

Twenty-five Years' Municipal Work at Lowestoft. G. H. Hamby. Read before the Inst. of Munic. & Co. Engrs. Gives general statistics and describes works at this town on the North Sea. Ills. 6000 w. Surveyor—June 28, 1912. No. 34317 A.

Public Service

Municipal Chemistry. J. H. Coste. Indicates the classes of service rendered by chemists to local authorities and considers the qualifications required. General discussion. 3000 w. Jour Soc of Arts—April 19, 1912. No. 32511 A.

Public Works

Increasing the Efficiency of a Municipal Public-Works Organization. Explains a system that enabled twice as many catch-basins to be cleaned with half as many men. 4000 w. Eng Rec—Dec. 9, 1911. No. 28708.

Purification

Two German Sewage Purification Works. Abstract translation of articles by Messrs. Balch and Blunk, describing plants at Graf Schwerin and at Holzwickede. Ills. 3000 w. Munic Jour and Engr—Feb. 22, 1912. Serial. 1st part. No. 30728.

Refuse

Methods of Handling House Refuse Before Collected by the City. Gives the recommendations of Samuel A. Greely, given before the New Jersey Sanitary Assn. Favors the one-can system. 1800 w. Engng & Con—May 15, 1912. No. 32911.

Refuse Collection in Columbus, Ohio. E. W. Stribling. Describes the buildings, equipment, methods and costs. Ills. 2500 w. Munic Jour—July 4, 1912. No. 34294.

Designing Refuse Removal Systems. F. R. Still. Read before the Am. Soc. of Heat. & Vent. Engrs. Considers methods which have been successfully used in removing waste. 3000 w. Met Work—Sept. 27, 1912. Serial. 1st part. No. 36378.

Clearing the City Refuse of Paris (L'Evacuation des Ordures Ménagères a Paris). P. Labordère. Description of the large automobile trucks with 6 cubic meter capacity used by the street cleaning department, and their efficiency. Ills. 4000 w. Génie Civil—April 13, 1912. No. 32774 D.

Refuse-Destructor

Horsfall Refuse - Destructor; Mersey Docks. Illustrated description of the latest improved plant at Liverpool. 3000 w. Engng—Nov. 17, 1911. No. 28356 A.

A 60-Ton Refuse Destructor at Montgomery, Ala. John Primrose. Illustrated description. 800 w. Eng News—June 20, 1912. No. 33860.

Colombo's Refuse Destructor. Clive H. Kilmister. Read before the Ceylon Engng. Assn. Illustrated description of the plant and its operation. 3500 w. Surveyor—April 12, 1912. No. 32263 A.

See also Incinerators, under *Municipal.*

Refuse Disposal

Some Observations Upon the Collection and Disposal of Garbage. Brief outline of a paper by Samuel A. Greeley, read before the New Jersey Sanitary Assn. 900 w. Eng News—Nov. 30, 1911. No. 28536.

The Proper Disposal of Domestic Wastes in Rural Districts. John Brook. Read before Inst. of Munic. Engrs., at Birmingham, Eng. Considers the requirements, conditions, and systems recommended. 2000 w. Surveyor—Jan. 19, 1912. No. 30160 A.

Street Cleaning and Refuse Disposal. F. W. W. Doans. Read before the Union of Nova Scotia Municipalities. Discusses methods of scavenging, the dangers and the importance to the health of a community. 3500 w. Can Engr—Aug. 29, 1912. No. 35718.

The Destruction of House Refuse by Incineration. Ray R. Knight. Considers incinerator plants, methods, costs, etc. 4500 w. Can Engr—Feb. 8, 1912. No. 30870.

American Refuse Disposal Plants. Describes plants at various cities, and reports a comparison of incineration, cremation and reduction disposal methods. Ills. 4500 w. Munic Jour—Sept. 5, 1912. No. 35789.

Report of Methods of Refuse Disposal at Toronto. Considers four projects and gives reasons for the final decision. 2500 w. Eng Rec—Dec. 23, 1911. No. 29143.

An Economic Study of the Four Alternate Methods Considered for the Disposal of the Garbage, Rubbish and Ashes of Toronto. Brief descriptions of the projects with estimates of cost. 3500 w. Engng & Con—March 27, 1912. No. 31620.

Modern Refuse Disposal Plants. Abstracts from the report of Messrs. Hering and Gregory to the city of Toronto, giving information concerning several of the newest plants. 2500 w. Munic Jour—May 30, 1912. No. 33311.

City Refuse Disposal at Seattle. George Holmes Moore. Gives the history of the refuse destructors, describing the latest type and giving operating results. Ills. 3500 w. Eng News—July 4, 1912. No. 34258.

The Disposal of a City's Waste. Franz Schneider, Jr. Illustrated account of how refuse is handled by New York and other cities. 2000 w. Sci Am—July 13, 1912. No. 34360.

The Destructor System of Refuse Disposal Recommended for Newark, New Jersey—By-products and Power Utilization. Abstract from the report of J. C. Hallock and F. O. Runyon, giving results of a comparative study of methods. 4000 w. Engng & Con—Sept. 11, 1912. No. 35912.

Operating Results of the Garbage-Reduction Works of Cleveland and Columbus, Ohio. John H. Gregory. Detailed report of results and costs. 3000 w. Eng News—Nov. 30, 1911. No. 28535.

Refuse Disposal in Cambridge, Mass. From a recent report of a Committee appointed by the City Council. Deals with the collection and disposal of refuse. 2500 w. Munic Engng—Feb., 1912. No. 30700 C.

Methods of Garbage Collection in Milwaukee, Present and Proposed. The Estimated Saving in Cost Under New Method. Describes the present and proposed systems and states savings expected. 4000 w. Engng & Con—March 20, 1912. No. 31455.

Specifications for a 10-Year Refuse Disposal Contract, Boston, Mass. Gives extracts from the specifications. 2500 w. Eng News—Nov. 28, 1911. No. 28232.

Run-Off

Run-Off from Sewered Areas. L. K. Sherman. Data on the run-off from certain sewered areas in the south part of the city of Chicago. Discussion. Ills. 4500 w. Jour W Soc of Engrs—April, 1912. No. 33112 D.

See also Catch-Basins, under *Municipal*.

Sanitation

The New Public Health. H. W. Hill. First of a series of articles stating the principles of modern official public health work. 1800 w. Eng News — Feb. 29, 1912. No. 30936.

Sewage Works and Street Gullies as Breeding Grounds of Mosquitoes. Dr. Elwin H. T. Nash. Illustrated account of an effort in England to locate the breeding places of gnats and mosquitoes. 2500 w. Surveyor—March 15, 1912. No. 31054 A.

Sanitary Conditions at Key West. James Nisbet Hazlehurst. Explains the geological conditions, the proposed sewer system, and the unusual sanitary conditions. Ills. 1500 w. Munic Jour—May 9, 1912. No. 32678.

Sanitary Research: A Suggestion. T. L. Hinckley. Remarks on the present day conditions and tendencies, and the matters included in the field under discussion. 1200 w. Munic Jour—May 30, 1912. No. 33310.

Water and Sewerage Systems. G. H. Altham. Brief review of public water supply development and its uses, and also the sewerage system. 1200 w. Can Engr—June 20, 1912. No. 33916.

Disinfectants, Antiseptics, and Deodorants, with Examples of Each. Hubert S. Jackson. Explanation of the office of each class. 1200 w. Surveyor—July 5, 1912. No. 34467 A.

See also Construction Camps, under *Construction*.

Scotland

Stirling and Its Municipal Works. A. H. Goudie. Read before the Munic & Co. Engrs. Brief descriptions of the water-works, sewers, streets, refuse disposal, public buildings, etc. General discussion. Ills. 10000 w. Surveyor—June 14, 1912. No. 33929 A.

Settling Basins

Continuous Settling Basins. Alexander Potter. Read before the Am. Water-Wks. Assn. Describes improvements at Muskogee, Okla., especially the method used for removing the settled sludge without interfering with the continuous operation of the plant. 2500 w. Munic Engng—Sept., 1912. No. 36323 C.

Sewage

See Purification, under *Water Supply*.

Sewage Disposal

Aerobic and Anaerobic Decomposition of Sewage. George W. Fuller. From advance sheets of a work on sewage disposal. Discusses the true nature of fermentation and putrefaction. 3000 w. Eng Rec—Nov. 4, 1911. No. 27708.

Decomposition of Organic Matter in Water and Sewage. George W. Fuller. A summary and discussion of present opinions, from a forthcoming book on sewage disposal. 3500 w. Eng Rec—Nov. 11, 1911. No. 27960.

The Different Conditions of Sewage and Their Causes. George W. Fuller. Discusses changes of importance in sewage disposal. 6500 w. Eng Rec—Nov. 18, 1911. No. 28094.

The Chemical Principles Involved in Sewage Disposal. George G. Nasmith. Read before the Can. Pub. Health Assn. Considers methods, concluding that trickling filters are bound to displace all other forms. 2500 w. Can Engr—March 7, 1912. No. 31112.

Notes on the Digestion of Sewage Sludge. Charles Saville. Discusses the advantages and disadvantages of separate sludge digestion tanks. 3000 w. Eng Rec—May 25, 1912. No. 33077.

Notes on the Digestion of Sewage Sludge. Charles Saville. Discusses the relative advantages of the separate sludge digestion tanks and the Imhoff tanks. 3000 w. Eng News—May 30, 1912. No. 33325.

The Digestion of Sewage Sludge. Charles Saville. Considers the relative advantages of the separate sludge digestion tanks and the Imhoff tanks. 2500 w. Can Engr—June 13, 1912. No. 33728.

The Relation of the Putrescibility of the Settling and Non-Settling Suspended Matter in Sewage. Dr. Arthur Lederer. Read before the Am. Pub. Health Assn. 2500 w. Eng Rec—Dec. 23, 1911. No. 29140.

Chemistry of Sewage Purification. Dr. Arthur Lederer. Methods employed at the Chemical Laboratory of the Sanitary District of Chicago. 7000 w. Jour W Soc of Engrs—Sept., 1912. No. 37038 D.

The Modern Sewage and Water Problem. Dr. Arthur Lederer. Read before the Illinois State Homeopathic Medical Soc. Reviews the history of sanitation and the methods of water purification and sewage treatment. 4000 w. Chem Engr—Oct., 1912. No. 36953 C.

Sewage Disposal by Oxidation. John D. Watson, Gilbert J. Fowler, Robert S. Weston, George A. Soper, F. H. Bass, and L. L. Tribus. Abstracts of papers and discussion before the Int. Cong. on Hygiene and Demography. 5000 w. Eng News—Oct. 10, 1912. No. 36756.

Sewage Disposal by Oxidation Methods. John Duncan Watson. Read before the Int. Cong. on Hygiene and Demography. Discusses details in purifying sewage by oxidizing methods. 3500 w. Surveyor—Oct. 4, 1912. No. 36841 A.

Sewage Treatment vs. Sewage Purification. Abstract of paper by George C. Whipple, before the Am. Pub. Health Assn. Favors the abandonment of the term sewage purification, and discusses the relation to water purification. 2200 w. Eng Rec—Oct. 5, 1912. No. 36551.

Sewage Purification. Rudolph Hering. Address before the Univ. of Toronto Engng Soc. Reviews the history of its development and outlines what are at present considered the principles upon which sewage purification is based and its disposal without offense. 5000 w. Ap Sci—April, 1912. No. 32405 C.

Some Observations on the Principles of Sewage Purification. W. Owen Travis. Read before the Assn. of Mgrs. Sewage Disposal Works. Aims to define the principles of sewage purification and endeavors to demonstrate them. 4500 w. Surveyor—Dec. 8, 1911. No. 29045 A.

The Use and Abuse of Sewage Disposal Plants. Chester A. Smith. Abstract of a paper before the Kansas Engng. Soc. Shows that plants are usually installed as a matter of convenience and necessity, and that the public need instruction in regard to their operation and effect on health. 2000 w. Engng & Con—Feb. 7, 1912. No. 30377.

Lawrence Experiment Station Studies in the Purification of Sewage. Summary of studies made by H. W. Clark and Stephen DeM. Gage, as given in the report of the Mass. State Board of Health for 1910. 5000 w. Engng & Con—Jan. 24, 1912. No. 30099.

Sewage Sludge and its Disposal. J. Grossmann. Read before the Manchester Sec. of the Soc. of Chem. Ind. Considers briefly ways of disposing and processes used, and refers to a new method of disposal by means of distillation with superheated steam. 4500 w. Surveyor—March 1, 1912. No. 31140 A.

Automatic Apparatus for Sewage Disposal Works. Weston Gavett. A resumé of two investigations. Ills. 6000 w. Cornell Civ Engr—June, 1912. No. 34013 C.

The Struggle with Sewage Sludge. William Naylor. Discusses its value as a manure, and its hygienic disposal. 5000 w. Surveyor—June 7, 1912. No. 33779 A.

Standard Tests of the Efficiency of Sewage Treatment. C. B. Hoover. Reviews the subject of sewage analysis, or testing the results of sewage treatment. 2500 w. Eng News—Sept. 5, 1912. No. 35840.

Methods of Sludge Disposal. Karl Imhoff. Read before the Int. Cong. on Hygiene & Demography. An illustrated article discussing the best methods. 2000 w. Eng News—Oct. 24, 1912. No. 36993.

The Imhoff Clarification Tank. D. Halton Thomson. Reports some results of working. 4500 w. Surveyor—Nov. 10, 1911. No. 28121 A.

Operating Results of the Sewage Clarification Works of Emschergenossenschaft. Abstract translation from a report by Dr. Spillner and H. Blunk. Investigations of raw and clarified sewage with general conclusions. 7000 w. Engng & Con—Nov. 1, 1911. No. 27641.

Recent Methods of Sewage Clarification and Sludge Treatment in Germany. E. Kuichling. Considers the Emscher tank, especially the plant at Elberfeld. 4000 w. Eng News—Dec. 28, 1911. No. 29173.

The Imhoff Tanks and Sprinkling Filters at Holzwickede, Germany. Charles Seville and Richard H. Gould. Illustrated description of these sewage disposal works. 2000 w. Eng Rec—Jan. 20, 1912. No. 29845.

The Madison-Chatham Sewage Disposal Works. Illustrates and describes a joint project in New Jersey, involving the construction of Imhoff tanks, contact beds, and sand filters. 3000 w. Eng Rec—Jan. 27, 1912. No. 30067.

Imhoff Tanks at Madison-Chatham, N. J. Clyde Potts. Illustrated description of this feature of a joint disposal plant. 1000 w. Cornell Civ Engr—Feb., 1912. No. 30875 C.

Recommendations for an Intercepting Sewer and Imhoff Tank at Albany, N. Y. Discusses sewage treatment work recommended and the cost. 1200 w. Eng News—Aug. 22, 1912. No. 35404.

Results of Septic Tank Treatment of Sewage at Plainfield, New Jersey. Roy S. Lanphear. Gives operating data and experimental studies of the liquefaction of solids. 4500 w. Eng Rec—Jan. 13, 1912. No. 29597.

Sewage Treatment at Prague. Abstract translation of a description prepared by the Chief Engr. of Sewers, with statement of results. 2500 w. Munic Jour & Engr—Jan. 11, 1912. No. 29547.

Sewage Treatment at Dresden. Illustrates and describes the sewers and the clarification of the sewage. 2000 w. Munic Jour & Engr—Dec. 28, 1911. No. 29267.

Septic Tank System of Waste Disposal. F. W. Tower. Explains a process of sewage reduction and gives suggestions on design of tanks. 1500 w. Met Work—Feb. 16, 1912. No. 30450.

Prevention of Aerial Nuisance from Sewage. Herbert D. Bell. Read before the Assn. of Mgrs. of Sewage Disposal Works. Explains conditions at Stratford-upon-Avon, and the septic treatment. 2500 w. Eng Rec—Aug. 3, 1912. No. 35023.

The Theory and Practice of Percolating Filters. J. E. Farmer. Read before the Discusses these subjects and gives conclusions. 1500 w. Plumb & Dec—Nov. 1, 1911. No. 28109 A.

Notes on the Theory and Practice of Percolating Filters. J. E. Farmer. Read at Croydon before the Assn. of Mgrs. of Sewage Disposal Works. Discusses factors to be considered in applying the theory. 1500 w. Can Engr—Jan. 4, 1912. No. 29489.

A New Sprinkling Filter at Reading, Pa. Illustrated description of a filter recently completed at the sewage purification works. 1200 w. Eng Rec—Dec. 30, 1911. No. 29234.

Present European Practice in Sewage Purification. R. L. Sackett. Read before the Indiana Engng. Soc. A review, showing that European practice is generally away from irrigation and toward filtration, often preceded by chemical precipitation. Ills. 4000 w. Munic Engng—Jan., 1912. No. 29999 C.

Experiments to Determine the Effect of Size and Depth of Broken Stone in Sprinkling Filters. Abstract from the report of Calvin W. Hendrick, giving results of investigations made at the Baltimore sewage experiment station. 3500 w. Engng & Con—Sept. 18, 1912. No. 36024.

Fixed Sprays versus Revolving and Traveling Sprinklers. Reginald Brown. Read before the Assn. of Mgrs. of Sewage Disposal Works. Presents facts relating to the comparative cost of each system. Discussion. 6500 w. Surveyor—June 28, 1912. No. 34319 A.

Engineering Problems Connected with Biological Sewage Treatment. T. Aird Murray. Part of a symposium on biological sewage disposal, Canadian Public Health Assn. Ills. 3000 w. Can Engr—Dec. 14, 1911. No. 29026.

Lethbridge Sewage Disposal Works. Plans and description of Canadian works having an interesting design of sedimentation tank. 2000 w. Can Engr—Feb. 1, 1912. No. 30248.

The Private Sewage Disposal Plant. Dr. Jacolyn Van Vliet Manning. Illustrated description of system adopted for the detached villa, farm or country house. 1500 w. Sci Am—April 13, 1912. No. 31948.

Installing a Small Sewage Disposal Plant. Henry N. Ogden. Discusses sewage disposal for country houses, the essentials, septic tanks and their limitations, etc. Ills. 2500 w. Dom Engng—March 16, 1912. No. 31242.

Residential Sewage Disposal Plants. R. Winthrop Pratt. From a paper before a conference of boards of health. Considers the general principles governing the design of such plants. Ills. 1500 w. Munic Engng—April, 1912. No. 33106 C.

The Design of Institutional Sewage Disposal Plants, with Special Reference to Plants at the Infirmary and the Children's Home of Greene County, Ohio. A.

Elliott Kimberley. Illustrated detailed descriptions. 3000 w. Engng & Con—May 8, 1912. No. 32656.

Institutional Sewage Disposal Plants. A. Elliott Kimberly. Illustrates and describes their design and construction, with special reference to the plants at the infirmary and children's home of Greene Co., Ohio. 3000 w. Dom Engng—May 25, 1912. No. 33135.

A Complete Sewage Disposal Plant for a Public Institution. T. Lowes. Read before the Can. Public Health Assn. A short description of a method used at the House of Refuge, at Cobourg, Ont. Ills. 2000 w. Can Engr—Sept. 19, 1912. No. 36088.

Country House Sewage Purification. John E. Tuke. Read at York Cong. of Roy San. Inst. Discusses the site, aerial nuisance, distribution, use of disinfectants, cost, etc. 2500 w. Surveyor—Sept. 6, 1912. No. 35994 A.

Sewage Disposal Plants for Country Residences. Warren H. Booker. From *N. C. Bul. of State Board of Health.* Illustrated detailed discussion of typical plants. 3500 w. Dom Engng—Oct. 26, 1912. No. 37040.

Sewage Disposal at an Ohio Institution. R. Winthrop Pratt. Illustrated account of methods of protecting the Scioto River from pollution by the wastes from an industrial home. 2200 w. Eng Rec—Oct. 26, 1912. No. 37002.

The Design of Residential Sewage Disposal Plants. Warren H. Booker. From Bul. of N. C. State Bd. of Health. A study of purification plants with special reference to sub-soil irrigation. Ills. 1700 w. Engng & Con—Aug. 7, 1912. No. 35075.

A Sewage Disposal System for a Country House. Cecil F. Harrington. Plans and explanation of a system and the necessary plumbing equipment. 2000 w. Dom Engng—July 6, 1912. No. 34282.

Sewage Disposal Works at a Pennsylvania Hospital. Describes the plant at the State Hospital for the Chronic Insane at Wernersville. 4500 w. Eng Rec—July 20, 1912. No. 34680.

Electrolytic Sewage Treatment at Oklahoma City, Including Estimated Cost of Operation. Howard V. Hinckley. Illustrated description. 3000 w. Engng & Con—Dec. 20, 1911. No. 29113.

Electrolytic Sewage Treatment. C. L. Edholm. Illustrated description of plants at Santa Monica and Oklahoma City, with results and costs. 1200 w. Munic Jour & Engr—Feb. 8, 1912. No. 30341.

Electrolytic Sewage Treatment. Howard V. Hinckley. Information concerning a plant in Oklahoma City, giving bacterial reports and operating costs. Also a review of the attempts to use electricity in the purification of water and sewage, and editorial. Ills. 9000 w. Eng News—March 21, 1912. No. 31468.

An Electrical Sewage Disposal Plant. C. L. Edholm. Describes the process of treating by electrolysis as practiced in Oklahoma City, and in Santa Monica, Cal. Ills. 1000 w. Can Engr—July 18, 1912. No. 34660.

The Design and Construction of the Sanitary Sewers and Sewage Disposal Works for the Borough of Chambersburg, Pa. Plans and description. 2200 w. Engng & Con—Nov. 15, 1911. No. 28062.

Experiments on Currents, Velocities and Sedimentation in a Modified Cologne Tank. N. Adelbert Brown. Gives results of a series of experiments conducted to obtain data on sedimentation, velocities and currents. 1500 w. Cornell Civ Engr—Dec., 1911. No. 29075 C.

Village Sewage Purification. Frederick J. Commin. A short illustrated description of recently installed plants. 1500 w. Surveyor—Nov. 24, 1911. No. 28660 A.

The Need of Well Considered Design and Efficient Operation of Sewage Disposal Plants. Langdon Pearse. Abstract of a paper before the Ill. Soc. of Engrs. & Survs. Brief study of the progress made in sewage disposal. Ills. 2000 w. Engng & Con—Jan. 31, 1912. No. 30145.

The Purification of Sewage Waters for Agricultural Use (Etudes sur les Eaux d'égout, au point de vue de leur Épuration et de leur Utilisation agricole). A. Müntz and E. Lainé. A chemical analysis of sewage to determine the available amounts of ammonia and nitrogen. 11500 w. Bull Soc d'Encouragement—Aug., 1911. No. 28850 G.

Sewage and the Farmer. W. T. Sedgwick. Discusses the conservation of waste. 2000 w. Sci Am—July 13, 1912. No. 34368.

Methods for Differentiating Soils for Sewage Purification. Gilbert J. Fowler and William Clifford. Read before the Assn. of Mgrs. of Sewage Disposal Works at Wolverhampton. Considers the subject under various heads, describing the variable pressure porosimeter used, and the constant pressure porosimeter and experiments. 4500 w. Surveyor—July 19, 1912. No. 34888 A.

Construction Cost of the Sewage Purification Works at Washington, Penn. Donald M. Belcher. Gives the cost of the different structures, with outline of the work. 1500 w. Eng News—April 11, 1912. No. 31938.

A Sewage-Disposal Plant for Attaining a High Degree of Purification. Illustrates and describes a plant at Pleasantville, N. Y., for the Hebrew Sheltering Guardian Society. 2500 w. Eng Rec—April 6, 1912. No. 31824.

The Sewage Purification Plant at Ligonier, Pennsylvania. Illustrates and describes details of a plant having Imhoff tanks, compressed-air ejectors, sprinkling filters, and hypochlorite disinfecting apparatus. 2200 w. Eng Rec—April 20, 1912. No. 32194.

The Sewage Disposal Works at Baltimore. Electricity for light and power is supplied by turbines operated by the effluent from 12 acres of sprinkling filters. Ills. 3500 w. Eng Rec—Feb. 24, 1912. No. 30781.

The Design of the Sewage Disposal Plant at Winchester, Kentucky. Charles E. Collins. Plans and description of the construction of Imhoff sewage clarification tank, sludge drying bed, inverted siphon, etc. 1000 w. Engng & Con—Feb. 14, 1912. No. 30426.

Sewage Disposal in Philadelphia. Illustrated detailed description of the Holmesburg sewage treatment plant. 4000 w. Munic Jour & Engr—Feb. 1, 1912. No. 30215.

Sewage Purification at Atlanta. William A. Hansell, Jr. Illustrated description of one of the three plants to treat the sewage of the city, including the Imhoff tanks. 2500 w. Eng News—March 14, 1912. No. 31182.

Pittsburg Sewage Disposal Reports. Gives outline of reports protesting against a proposed heavy outlay, with explanation of conditions. Also editorial. 8500 w. Eng News—Feb. 29, 1912. No. 30940.

Progress in Canada in Biological Methods of Sewage Disposal During the Last Twenty Years. Willis Chipman. Read before the Can. Pub. Health Assn. Reviews the progress of sewage purification. 3000 w. Can Engr—May 2, 1912. No. 32632.

Proposed Joint Sewage Purification Works for Orange, Montclair and East Orange, N. J. Information concerning an interesting sewage disposal works intended to produce a high-grade effluent. 1800 w. Eng News—May 9, 1912. No. 32689.

Worcester's Sewerage and Sewage Disposal. Information from the last annual report concerning the operation of sand filters, experiments with Emscher tank, sprinkling filters, etc. 6000 w. Munic Jour & Engr—May 2, 1912. No. 32546.

Sewage Treatment of the Experimental Plant in Worcester. Information from the report of Matthew Gaults, superintendent of sewers, for the year ending Nov. 30, 1911. 2500 w. Eng Rec—May 18, 1912. No. 32931.

The Sewage Disposal Works at Lebanon. Illustrates and describes a plant installed in Pennsylvania to prevent pollution of a stream used for water supply. 2200 w. Eng Rec—May 4, 1912. No. 32588.

The Joint Scheme of Sewerage of Thornton - le - Fylde, Bispham-with-Norbreck, and Carleton. Arthur Hindle. From a paper read before the Roy. San. Inst. Describes the outfall works, ejectors, air-compressing station, etc. 2500 w. Surveyor—May 31, 1912. No. 33667 A.

The Sewage Disposal at Pelham. Illustrated description of works in a residential district requiring heavy reinforcement. 1600 w. Eng Rec—June 22, 1912. No. 33882.

British Practice in Sewage Disposal. Arthur J. Martin. Read at the Berlin Cong. of the Roy. Inst. of Pub. Health. 4000 w. Surveyor—Sept. 13, 1912. No. 36254 A.

The Method of Estimating the Sewage Flow for the New Intercepting Sewer and Disposal Works at Fitchburg, Mass. Abstracted from a report by David A. Hartwell and Harrison P. Eddy, summarizing studies made to determine the amount of sewage. 3000 w. Engng & Con—Sept. 4, 1912. No. 35797.

Sewage Treatment at Mt. Vernon, N. Y. Charles A. Hammond. Illustrates and describes works, including septic tanks, sludge beds, sprinkling filters and a final settling basin. Presents some of the operating results. 6500 w. Eng News—Sept. 19, 1912. No. 36095.

Sewerage of Shelbyville, Ind. Illustrated description of sewer plans containing many interesting features due to location, topography and the character of the soils. 1300 w. Munic Engng—Sept., 1912. No. 36318 C.

Skilled Supervision of Sewage Purification Works. Abstract of remarks by F. Herbert Snow before the Am. Pub. Health Assn. Considers the supervision required. 2000 w. Eng Rec—Oct. 5, 1912. No. 36552.

Plans of the Metropolitan Sewerage Commission. Information from the fourth preliminary report dealing with proposed methods and works for the collection of the city's sewage and its disposal. 2000 w. Eng Rec—Oct. 19, 1912. No. 36903.

Ilkeston Sewage Disposal Works. Hugh P. Raikes. Plan and illustrated description of recently completed works and their operation. 4000 w. Surveyor—Oct. 4, 1912. No. 36840 A.

The Status of Sewage Disposal in Massachusetts. Robert Spurs Weston and W. L. Butcher. Discusses interesting points in connection with some of the works, and the influence of the State Board of Health. 4500 w. Engng & Con—Aug. 14, 1912. No. 35232.

Screening Sewage at Plainfield. Roy S. Lanphear. Illustrates and describes the screening chambers and their operation. 1500 w. Eng Rec—Aug. 3, 1912. No. 35018.

Changes in the Design of the Plainfield Sewage Disposal Plant. R. S. Lanphear. Considers the changes found desirable in this contact filter system. 1800 w. Eng Rec—Aug. 10, 1912. No. 35120.

Sewage Purification at Reading, Penn. E. Sherman Chase. An account of the system in operation since Jan., 1908, consisting of preliminary screening, sedimentations and treatment by sprinkling filters. Ills. 5500 w. Eng News—Aug. 22, 1912. No. 35396.

Sewage Disposal Plans for Jamaica Bay, New York. Information from the third preliminary report issued by the Metropolitan Sewerage Commission. 2000 w. Eng Rec—July 27, 1912. No. 34805.

The Disposal of the Sewage of Chicago. Official statement of existing conditions and proposed remedies. 2000 w. Eng Rec —Nov. 4, 1911. No. 27712.

A Comprehensive Sewage-Treatment Program for the Sanitary District of Chicago. Information from a report by G. M. Wisner giving important facts regarding the present condition of the Drainage Canal and rivers which receive its waters, and pointing out future needs to supplement dilution disposal. Also editorial. 10500 w. Eng News—Nov. 30, 1911. No. 28582.

The Berlin Sewage Farms. H. Alfred Roechling. Read before the Roy. San. Inst. Notes from the annual report for the year ending March 31, 1910. 6500 w. Surveyor—Nov. 17, 1911. No. 28272 A.

Royal Commission on Sewage Disposal. H. C. H. Shenton and W. C. Easdale. Review of the seventh report. 3000 w. Surveyor—Dec. 1, 1911. No. 28758 A.

Methods and Cost of Purifying Sewage in the State of Ohio. R. Winthrop Pratt. A review of preliminary and finishing processes in use in the State, with tabulated information. 3500 w. Engng & Con —Dec. 13, 1911. No. 28960.

The Most Important Sewerage and Sewage Disposal Report Made in the United States. Reviews the report of Messrs. Hazen and Whipple advising the city of Pittsburgh to disregard the recommendations of the Pennsylvania Health Department. 6000 w. Eng Rec—Feb. 24, 1912. No. 30783.

Batavia, N. Y., Sanitary Sewer System. R. L. Fox. Illustrated description of a system comprising 32 miles of separate sewers, a pumping station and disposal plant. 2500 w. Cornell Civ Engr—Feb., 1912. No. 30873 C.

Chemical Disinfection of Sewage. Earle B. Phelps. Reports Results of large scale experiments on use of hypochlorites. 3500 w. Munic Jour & Engr—May 2, 1912. No. 32548.

See also Industrial Wastes, under *Municipal;* Purification, under *Water Supply;* Pollution, under *Waterways and Harbors*, and Subways, under STREET AND ELECTRIC RAILWAYS.

Sewage Odors

Sewage Bacteria and Odors. George W. Fuller. A portion of a chapter in a forthcoming book. Considers methods of guarding against these odors and their sanitary significance. 3500 w. Eng News —Jan. 4, 1912. No. 29390.

Sewage Pumps

Chattanooga Sewage Pumping Station. Robert Hooke. Illustrated description of a pump well forty-seven feet deep, operated by automatically controlled A. C. Motors. 1600 w. Munic Jour & Engr—May 2, 1912. No. 32547.

Chattanooga's Sewage Pumping Station. Illustrated description, explaining conditions. 1200 w. Eng Rec—July 20, 1912. No. 34678.

See also Pumps, under MECHANICAL ENGINEERING, *Hydraulic Machinery.*

Sewage Records

The System of Recording Sanitary Sewer Notes in Use at Dayton, Ohio. F. O. Eichelberger. Describes a comprehensive yet concise system. 1200 w. Engng & Con—April 10, 1912. No. 31911.

Sewer Pipes

Reinforced Concrete Pipe Construction for Regina Sewer. W. R. Harris. Describes the construction of a modern sewerage system in this city of Saskatchewan, Canada. 3800 w. Cement & Eng News—March, 1912. No. 31274.

Sewers

The Ventilation of Sewers. T. de Courcy Meade. Read at Berlin Cong. of the Roy. Inst. of Pub. Health. Principally practice in English towns. 6000 w. Surveyor—Sept. 27, 1912. No. 36723 A.

The Ventilation of Sewers. T. De Courcy Meade. Read at Cong of the Roy. Inst. of Pub. Health. Reviews methods adopted at various places in England and investigations made. 5000 w. Can Engr —Oct. 24, 1912. No. 37052.

Value of the Main Trap in House Connections of Sewers. Summary of conclusions reached by a British committee after an investigation lasting five years. 3500 w. Dom Engng—Oct. 5, 1912. No. 36583.

Concrete in Sewer Construction. W. J. Baird. An investigation of how concrete sewers compare with those of other materials, and description of forms used. 8000 w. Ap Sci—June, 1912. No. 34828 C.

Methods and Cost of Flushing Sewers. An illustrated economic study of this subject. 2200 w. Engng & Con—April 24, 1912. No. 32325.

Sewer Standards in American Cities. First of a series of articles describing current practice in the design and construction of ordinary engineering structures. Ills. 1400 w. Engng & Con—Dec. 27, 1911. Serial. 1st part. No. 29255.

Engineering Work in the Bureau of Sewers in Brooklyn Borough. J. B. Van Vleck. Explains the various activities of the bureau, tracing the construction of a sewer through its various stages. Ills. 6500 w. Pro Brooklyn Engrs' Club, Paper 99—Jan., 1911. No. 28985 N.

The Duane Street Sewer. Thad. L. Wilson. States conditions and gives illustrated detailed description of the sewer and its construction. 5000 w. Pro Brooklyn Engrs' Club, Paper 96—Jan., 1911. No. 28982 N.

Methods of Construction on the Cleveland Main Intercepting Sewer Between East 61st and East 79th Streets. Ivan A. Greenwood. Illustrated description. 1800 w. Engng & Con—Jan. 10, 1912. No. 29524.

Drainage Improvements and Intercepting Sewer System for Syracuse, N. Y. Stephen B. Vernon. Brief illustrated description of designs and details of the Harbor Brook improvement and the sewer constructed to intercept the flow of sewage into this stream. 1000 w. Cornell Civ Engr—Feb., 1912. No. 30877 C.

The Susquehanna River Intercepting Sewer. Illustrates and describes work at Harrisburg Pa., in order to improve conditions of the water front. 1500 w. Eng Rec—Feb. 24, 1912. No. 30735.

Large Submerged Sewer Outlet. John F. Skinner. Illustrated description of the sewage disposal system of Rochester, N. Y., especially the method of laying the effluent pipe in Lake Ontario. 1500 w. Munic Jour—Aug. 15, 1912. No. 35223.

The Plans and Specifications for the Construction of Sewer Catch Basins in Pittsburgh, Pa.—Specifications for Concrete and Brick Masonry in Sewers and Appurtenances. Ills. 2500 w. Engng & Con—July 17, 1912. No. 34609.

Combined Flood-Wall and Intercepting Sewer. Describes a structure at Grand Rapids, Mich., showing how one structure serves a double purpose. 2200 w. Eng Rec—June 22, 1912. No. 33881.

St. Paul's Sand Rock Sewers. C. H. Harrold. Illustrates and describes construction details of tunnels and drop shafts cut out of sand rock thirty feet or more below the street surface. 1000 w. Munic Jour—June 6, 1912. No. 33485.

Specifications for the Manufacture, Testing, Dimensions and Laying of Plain Concrete Sewer Pipe, Kansas City, Mo. Gives specifications drawn by L. R. Ash, city engineer. 1800 w. Engng & Con—April 17, 1912. No. 32146.

The New Sewer Standards of Richmond, Va.—Dimensions of Trenches—Instructions to Inspectors. Allen J. Saville. Gives standard plans drawn to improve the quality of the work and secure uniformity in construction. Ills. 1600 w. Engng & Con—April 17, 1912. No. 32145.

New Sewer Work at St. Louis, Mo. W. W. Horner. Describes features of the Dale Ave. joint sewers and the concrete girder sewer in Glaise Creek, District No. 3. Ills. 5000 w. Eng News—Sept. 5, 1912. No. 35834.

Large Sewers in Newark, N. J. E. S. Rankin. Illustrated description of a comprehensive system of storm water sewers to drain some 1,700 acres. 1500 w. Munic Jour—Oct. 24, 1912. No. 37014.

Piney Branch Trunk Sewer Outlet, Rock Creek Park, Washington. Illustrates and describes the decorative treatment of an outfall in District of Columbia, where flow of sewage is regulated automatically. 2000 w. Eng Rec—March 23, 1912. No. 31479.

Cleveland Intercepting Sewer System. J. M. Estep. Outlines a project to divert the sewage from the rivers and lake front, describing the leading features of the work. Ills. 3000 w. Eng News—March 28, 1912. No. 31631.

Construction of a Large Sewer in Spokane. R. A. Brackenbury. Illustrates and describes the design and construction of a reinforced concrete sewer built in place. 3000 w. Eng Rec—Aug 10, 1912. No. 35122.

Combined Sewer and Bridge in Denver. Explains conditions and gives illustrated description of the reinforced-concrete structure. 1200 w. Eng Rec—Sept. 7, 1912. No. 35809.

The Sewers of Indianapolis, Ind., and Future Improvements. H. G. Hawekotte. Describes conditions and the improvements recommended. Map. 2000 w. Engng & Con—Sept. 11, 1912. No. 35911.

Cost of Trenching with Sewer Excavation in Moundsville, W. Va. A. W. Peters. Tabulated costs with description of work. 1500 w. Engng & Con—Feb. 28, 1912. No. 30862.

Main Drainage Works, Toronto, Canada. R. C. D. Tempest. Illustrates and describes the sewerage system, explaining conditions to be met. 1500 w. Cornell Civ Engr—Feb., 1912. No. 30878 C.

A Brief Sketch of the Havana (Cuba) Sewer and Drainage System. H. E. Hyde. Ills. 4500 w. Cornell Civ Engr—Feb., 1912. No. 30876 C.

Maintenance, Flushing and Cleansing of Sewers in Hampstead. Oliver E. Winter. Read before the Inst. of Munic & Co Engrs. Describes special features of work recently carried out. General discussion. Ills. 4500 w. Surveyor—Aug. 16, 1912. No. 35468 A.

New Main Low-Level Sewer for the South Side of London. R. M. Gloyne. Abstract of a paper read before the Inst. of Munic. & Con. Engrs. Description of this sewer and its construction. 1500 w. Engr, Lond—Oct. 27, 1911. No. 27977 A.

Notes on the Construction of the New Main Low-Level Sewer for the South Side of London from Battersea to Deptford. R. M. Gloyne. Read before the Inst. of Munic. & Co. Engrs. Description of the work, with short discussion. 4000 w. Surveyor—Oct. 27, 1911. No. 27672 A.

Reinforced Concrete Channels for Storm Waters at Lichtenberg (Eisenbetonkanal des Hauptwassersammlers zu Lichtenberg). E. Schlotterer and Max Rüdiger. Details of design and construction of these storm water sewers. Ills. 2000 w. Beton u Eisen—Aug. 24, 1912. No. 36133 E.

Smoke

The Smoke Abatement Conference. Abstracts of papers read in London, showing what is being done in different localities. 3000 w. Power—April 30, 1912. No. 32437.

Smoke Abatement. Dr. John S. Owens. Read before the British Assn. Discusses the possibility of establishing a new standard of smoke emission for factory chimneys. 4000 w. Can Engr—April 18, 1912. No. 32232.

The Influence of Smoke on Decorations. Noel Heaton. Read at Coal Smoke Abatement Conf., London. Examines effects that have come under the author's experience. The effect on stained glass, paintwork, fresco paintings, etc. 1500 w. Archt, Lond—March 29, 1912. No. 31870 A.

The Action of Coal Smoke on Building Stones and Mural Paintings. Sir Arthur Church. Read at Coal Smoke Abatement Conf., London. Describes coal smoke and its harmful constituents and their effects. 1500 w. Archt, Lond—March 29, 1912. No. 31871 A.

The Effect of Coal Smoke on Buildings. Harry Redfern. Read at Coal Smoke Abatement Conf., London. Mainly discussed from the viewpoint of the architect. Also considers what is being done to mitigate the evils. 2500 w. Archt, Lond—March 29, 1912. No. 31869 A.

Prevention of Smoke by Combustion. Describes the addition of fireclay tubes in the furnace to retain heat for burning distilled gases. Ills. 2000 w. Mines & Min—May, 1912. No. 32538 C.

Snow Removal

Coping with Snow in Boston. Edward Dana. Describes the snow-fighting methods used on the Boston Elevated Ry. and the surface lines. 1000 w. Elec Ry Jour—March 9, 1912. No. 31107.

ROADS AND PAVEMENTS

American Road Congress

The American Road Congress. Abstracts of papers presented at the meeting at Atlantic City, N. J., Sept. 30 to Oct. 5. 12000 w. Eng Rec—Oct. 12, 1912. No. 36784.

Arrangement

Street Planning. Thomas H. Mawson. Shows that it is the key to the whole subject of city planning, and discusses matters of importance to secure good results. 6000 w. Ap Sci—Dec., 1911. No. 29074 C.

Asphalt

Standard Tests for Asphaltic Cements for Sheet Asphalt Pavements. James W. Howard. Read before the Am. Soc. of Munic. Imp. Gives tabulated standard tests, and notes. 2000 w. Munic Engng—Nov., 1911. No. 28327 C.

Specifications for Asphaltic Concrete and for Sheet Asphalt Pavements, Vancouver, B. C. Gives specifications adopted in May, 1912. 3000 w. Eng News—Oct. 24, 1912. No. 36996.

Life and Cost of Asphalt Pavement. G. H. Morton. Information based on an analysis of cost and service records of sheet asphalt pavements in Buffalo, N. Y. 6000 w. Eng News—Sept. 26, 1912. No. 36357.

Cost of Maintaining Asphalt. Gives average costs in Rochester, Buffalo, and Brooklyn, N. Y., covering sixteen to twenty year periods. 2500 w. Munic Jour & Engr—Feb. 1, 1912. No. 30216.

Costs of Constructing and Maintaining Petrolithic Roads and Streets, Together with Data on Other Liquid Asphalt Roads. K. F. Postle. Information concerning roads in California. Ills. 2200 w. Engng & Con—May 1, 1912. No. 32554.

Trinidad and Bermudez Asphalts and Their Use in Highway Construction. Clifford Richardson. An account of these deposits, the manner of exploiting them and their industrial applications in highway construction. Ills. 3000 w. Pop Sci M—July, 1912. Serial. 1st part. No. 34260 C.

Naphthalene in Road Tars. Prévost Hubbard and Clifton N. Draper. Considers the effect of naphthalene upon the consistency of refined tars. 3000 w. U S Office of Pub Roads, Circ 96—Nov. 1, 1911. No. 28246 N.

Repairing Asphalt Pavement. Gives results of work done for the city of Chicago under contract in 1911, the methods, etc. Ills. 4000 w. Chicago Bureau of Pub Efficiency—Oct., 1911. No. 29822 N.

Recent Practice in Asphalt Pavements (Ueber einige neuere Erfahrungen bei Oberflächenteerungen). K. Breitenfelder. Some of the later developments in the preparation and application of asphalt. 5000 w. Ills. Oest Wochenschr f d Oeff Baudienst—Oct. 5. 1911. No. 28437 D.

See also same heading, under *Materials of Construction.*

Asphalt Macadam

Asphalt Macadam Construction at Carlisle, Pa. C. A. Bingham. Illustrated description of work with detailed cost. 2000 w. Engng & Con—Dec. 20, 1911. No. 29108.

Asphalt-Macadam. Cecil Nathan. Considers the characteristic properties of the material, and the methods of constructing such roads. 1500 w. Surveyor—July 19, 1912. No. 34887 A.

Auto Power

Building Good Roads by Auto Power. Rex Beresford. Illustrated description of a cheap way of improving highways. 2200 w. Sci Am—March 16, 1912. No. 31166.

Utilization of Motor-Truck Trains in the Maintenance of Trunk Highways. Logan Waller Page. Read before the Am. Assn. for the Adv. of Sci. Suuggestions for an automobile equipment for maintenance of road surface. Ills. 3000 w. Horseless Age—March 27, 1912. No. 31625.

Bituminous

Use of Bitumens for Roads. Arthur H. Blanchard. Read before the Am. Assn. for the Adv. of Science. A review of the use of bituminous materials in the construction and maintenance of American highways during 1911. 4000 w. Munic Jour—May 16, 1912. No. 32937.

A Review of the Use of Bituminous Materials in the Construction and Maintenance of Highways During 1911. Prof. Arthur H. Blanchard. Read before the Am. Assn. for the Adv. of Science. Describes work accomplished during the past year. 4500 w. Engng & Con—May 29, 1912. No. 33306.

Bituminous Macadam Construction. A. N. Johnson. Read before the Indiana Engng. Soc. Deals in detail with this form of construction. 5000 w. Munic Engng—Feb., 1912. No. 30698 C.

Bituminous Roads and Pavements and Their Materials of Construction. Prévost Hubbard. Discusses some of the fundamental principles, the selection of materials, methods of construction, etc. 7000 w. Jour Fr Inst—April, 1912. No. 32168 D.

Bituminous Roads. W. W. Crosby. From a paper before the Am. Assn. for Highway Imp. Discusses the use of bitumen in connection with ordinary road materials, and the methods suited to the conditions, etc. 2500 w. Munic Engng—Jan., 1912. No. 30000 C.

The Bitumen Content of Coarse Bituminous Aggregates. Provost Hubbard. Read before Int. Assn. for Test. Mat. Considers facts regarding the proportioning of aggregate and bitumen in the construction of bituminous macadam by the mixing process. 1500 w. Engng & Con—Sept. 4, 1912. No. 35794.

Bituminous Road Construction. Claims that bituminous concrete is more economical than bituminous macadam. Ills. 2000 w. Munic Jour—Sept. 26, 1912. No. 36372.

Uses of Bitumens on Wisconsin Roads. H. J. Kuelling. Considers the material, best practice, methods, etc., in a general way. 3500 w. Wis Engr—March, 1912. No. 31575 C.

History of the Washington Bituminous-Concrete Pavements. Mark Brooke. Read before the Am. Assn. for the Adv. of Sci. 3000 w. Eng Rec—Feb. 3, 1912. No. 30257.

Maintenance of Existing Roads by Hot Application of Bituminous Binder. Harry Tipper. Explains the purposes and methods of application. 2500 w. Eng Rec—Nov. 18, 1911. No. 28093.

See also Macadam, under *Roads and Pavements*.

Brick

Brick Roads: Material, Construction and Maintenance. Theodore A. Randall. Abstract of a lecture before the Am. Road. Cong. Illustrated explanation of the good qualities of a vitrified brick pavement. 1600 w. Can Engr—Oct. 24, 1912. No. 37051.

The Life of Brick Pavements. Gives results of an inquiry sent to some 75 cities in the United States. 5000 w. Engng & Con—June 19, 1912. No. 33822.

Brick Pavement Problems. Herbert W. Hatton. Discusses expansion and contraction, expansion points at street intersections, etc. 1500 w. Munic Jour & Engr—Nov. 22, 1911. No. 28257.

Brick Pavement Problems. Maury Nicholson. Read before the Am. Soc. of Munic. Imp. Notes on the action of cement grouted and of sand filled pavements in Birmingham, Ala. Ills. 2500 w. Munic Jour & Engr—Nov. 1, 1911. No. 27657.

The Contraction and Expansion of Vitrified Brick Street Pavements. Will P. Blair. Read before the Am. Soc. of Munic Imp. A report of conditions at Cleveland, Ohio, and the cause of ruptures. 2200 w. Engng & Con—Nov. 1, 1911. No. 27640.

Strain Measurements of Brick Pavements. James E. Howard. Read before the Nat. Brick Mfrs.' Assn. Reports physical tests, effects of street cars and of temperature variations, etc. Ills. 2500 w. Munic Jour & Engr—April 4, 1912. No. 31795.

Strain Measurements of Brick Pavements. James E. Howard. Reports investigations to determine the relation of street-car tracks to pavements, and the effect of variations in temperature. 2000 w. Eng News—June 20, 1912. No. 33859.

How One County Built a Good Road. J. M. Miller. The story of a brick pavement in West Virginia hills. Ills. 1200 w. Sci Am—Oct. 12, 1912. No. 36774.

Canada

Canadian Road Systems. W. A. McLean. Read before the Am. Road Cong. Reviews the work that has been accomplished and the aims for future development. 2000 w. Can Engr—Oct. 17, 1912. No. 36909.

Concrete

Cement-Concrete Roads. Abstracted from Annual Report on Highway Improvement, Ontario, 1911. Discusses their proper construction, their advantages and disadvantages and cost. 1000 w. Can Engr—Dec. 7, 1911. No. 28725.

Portland Cement Concrete Roads. Logan Waller Page. Read before the Am. Assn. of Portland Cement Mfrs. Believes concrete can be made generally successful if sufficient care is used in the selection of materials and construction. 2500 w. Eng Rec—May 25, 1912. No. 33078.

Portland Cement Concrete Roads. From a paper by Logan Waller Page before the Am. Assn. of Portland Cement Mfrs. Gives information on present practice in the construction of concrete pavements. 2500 w. Engng & Con—June 12, 1912. No. 33701.

Concrete Highways in New York State. Describes a jointless concrete road on Grand Island, Erie County. Ills. 2000 w. Concrete-Cement Age—Sept., 1912. No. 36017.

The Concrete Roads of Wayne County, Michigan. George A. Dingman. Describes methods of construction and maintenance. 3000 w. Engng & Con—June 19, 1912. No. 33821.

Method and Cost of Constructing a Concrete Street Pavement. Howard Egleston. Record of laying concrete pavement in a street and constructing cement sidewalks under difficult conditions. 2000 w. Engng & Con—Feb. 28, 1912. No. 30861.

Concrete Paving in Eight Cities. Reports by different writers from cities of the Middle West. Ills. 11000 w. Munic Jour of Engr—March 21, 1912. No. 31460.

Concrete Pavements in Davenport, Iowa. A. M. Compton. Read before the Iowa Engng Soc. Reports results and experience with reinforced concrete pavement, and describes present practice. 2200 w. Eng Rec—May 4, 1912. No. 32582.

Concrete Pavements—History and Summary of Practice. A brief history and summary given in a paper by K. H. Talbot in a paper before the Iowa Engng. Soc. 4000 w. Engng & Con—July 10, 1912. No. 34414.

One Course Concrete Sidewalks. H. M. Jones. Illustrates and describes work in Salt Lake City, Utah. 1800 w. Concrete-Cement Age—July, 1912. No. 34437.

An Improved Concrete Pavement. E. W. Groves. Detailed description of work carried out by the writer, with results. 2200 w. Cement & Engng News—Aug., 1912. No. 35226.

Expansion Joints for Concrete Pavements. Illustrates and describes some of the different methods employed. 2000 w. Engng & Con—Aug. 28, 1912. No. 35613.

Concrete Pavements; Their Advantages and Disadvantages. P. E. Green. Discusses the characteristics of concrete which tend to reduce its value as a pavement; and the locations, both proper and improper, for its use. Ills. 2000 w. Eng News—Sept. 26, 1912. No. 36355.

A Review of Concrete Paving Methods in Various Places. K. H. Talbot. Read before the Iowa Engng Soc. 3500 w. Concrete-Cement Age—Oct., 1912. No. 36797.

The Construction of Concrete Pavements. A. M. Compton. An account of early experience, the use of reinforced-concrete pavement, present practice, and the objections to concrete street paving. 2000 w. Cement & Engng News—Oct., 1912. No. 36814.

Methods of Constructing Concrete Alley Pavement at Billings, Mont. John N. Edy. Cross-sections and description of the work. 2000 w. Engng & Con—Oct. 9, 1912. No. 36760.

Concrete Pavements at Ann Arbor. E. W. Grons. From a paper before the Nat. Assn. of Cement Users. Gives results of experience with combined concrete and asphalt pavements. 2000 w. Eng Rec—April 27, 1912. No. 32388.

Methods and Cost of Constructing Concrete Combined Curb and Gutters and Concrete Sidewalks. E. W. Robinson. Report of work in Webb City, Mo. 3000 w. Engng & Con—May 15, 1912. No. 32909.

Bituminous Concrete Pavements. H. G. Lykken. From a paper read before the Am. Soc. of Munic. Imp. Discusses this surfacing material and its requirements. Also discussion by George C. Warren. 5500 w. Munic Engng—Nov., 1911. No. 28328 C.

See also Bituminous, under *Roads and Pavements*.

Construction

Practical Road Building. John N. Edy. Discusses the fundamental principles. 1500 w. Munic Engng—Dec., 1911. No. 28771 C. 29997 C.

Practical Road Building. John N. Edy. The present article offers suggestions for staking out the work. 2000 w. Munic Engng—Jan., 1912. Serial. 1st part. No.

Practical Road Building. John N. Edy. The present article discusses the construction of earth roads. Ills. 2000 w. Munic Engng—Feb., 1912. No. 30695 C.

Practical Road Building. John N. Edy. The present number discusses sand-clay roads. 1500 w. Munic Engng—April, 1912. Serial, 1st part. No. 33103 C.

Problems of Road Construction. W. W. Crosby. Read before the Am. Roadbldrs. Assn. Brief discussion of clearing, culverts, drainage, masonry, sub-grade, old grades and surfacing. 2500 w. Eng Rec—Nov. 25, 1911. No. 28290.

Good Roads and How to Build Them. Logan Waller Page. Deals with building methods in the United States, the materials, maintenance, administration, etc. 2500 w. Sci Am—March 16, 1912. No. 31167.

The Road: Past, Present and Future. John H. A. Macdonald. Reviews road building methods and discusses future requirements. 9000 w. Surveyor—Feb. 23, 1912. No. 31024 A.

Permanent Structures. James S. Bell. Read before the Ontario Good Roads Assn. Considers materials, especially concrete, design, inspection, etc. 2500 w. Can Engr—Feb. 29, 1912. No. 30947.

The Economy of Good Roads. Victor Hart. Considers the principles of Roman road building, Macadam's method, modern roads for automobiles, etc. Map. 3000 w. Horseless Age—May 8, 1912. Serial. 1st part. No. 32672.

Science in the Service of Highway Construction. Clifford Richardson. Outlines the development of the modern methods of highway construction, and shows how science has aided. 5000 w. Pop Sci M—April, 1912. No. 31726 C.

Road Construction and Maintenance. An informal discussion of fillers for brick and block pavements, of bituminous surfaces, methods, etc. 7500 w. Pro Am Soc of Civ Engrs—March, 1912. Serial. 1st part. No. 32138 F.

Making a Highway in Two Days. Samuel H. Lea. An illustrated account of the work, the methods adopted, local conditions, and results. 4000 w. Eng News—Oct. 10, 1912. No. 36752.

The Contractors' Side of Road Building. D. L. Hough. From a paper before the Am. Assn. for Highway Imp. Discusses difficulties and offers suggestions. 3500 w. Munic Engng—May, 1912. No. 33193 C.

County Road Construction in Ontario. W. A. McLean. Address before the Ontario Good Roads Assn. Discusses methods of construction now approved, and related subjects. 3500 w. Can Engr—Feb. 29, 1912. No. 30946.

Stone and Gravel Roads. W. A. McLean. Read before the Am. Road Bldrs. Assn. Information concerning roads in Ontario, Canada, their construction, maintenance, etc. 3500 w. Munic Engng—May, 1912. No. 33195 C.

Road Construction and Maintenance. An informal discussion on materials, etc. Ills. 11800 w. Pro Am Soc of Civ Engrs—May, 1912. No. 33226 F.

Dustless Roads and Bituminous Binders. William F. Prouty. Abstract of a paper from Bul. No. 11, issued by the Geol. Survey of Alabama. Gives much valuable information concerning highway construction in the Southern States. 3500 w. Cassier's Mag—Jan., 1912. No. 29883 B.

Highway Construction and Maintenance in Massachusetts. A summary of the work of the Massachusetts Highway Commission during the year ending Nov. 30, 1911. 2000 w. Eng Rec—Jan. 20, 1912. No. 29843.

Some Standards of the Department of Public Works of the City of Pittsburgh, Pa., for Street Construction. Gives the new standards which contain a number of important changes. 2000 w. Engng & Con—Aug. 21, 1912. No. 35387.

Removing Pittsburg's Hump. Descriptive sketch of a civic improvement. 600 w. Eng News—Jan. 11, 1912. No. 29536.

Grading the Hump at Pittsburgh. William E. Patterson. Illustrates and describes work that requires altering of costly buildings, and reconstruction of sewers, wire conduits, and water mains. 2200 w. Munic Jour—Aug. 1, 1912. No. 35009.

See also Auto Power, and England, under *Roads and Pavements*.

Construction Costs

Cost Data on the Construction of 27 Sand-Clay Roads. Outlines construction work in 1911, as reported by Logan Waller Page. 6500 w. Engng & Con—Jan. 17, 1912. No. 29831.

Convict Labor

Convict Labor on State Roads. Report of an experiment carried out by Onondaga Co., New York. 2500 w. Eng Rec—Feb. 10, 1912. No. 30346.

Highway Construction in the State of Washington by Convict Labor. Frank A. Kittredge. An illustrated account of results of convict labor. The work was difficult and the success remarkable. 4500 w. Engng & Con—June 26, 1912. No. 34103.

Convict-Labor in Highway Construction. Joseph Hyde Pratt. Read before the Am. Road Cong. Discusses the general principles relating to the employment of such labor and the economics of employing this labor in the construction of improved roads. 4000 w. Engng & Con—Oct. 23, 1912. No. 36958.

Costs

Cost Data on Hauling Stone with a 22-Horse-Power Traction Engine and Stone Spreading Cars, Gatchellville Road, York County, Pennsylvania. John F. Hammond. Ills. 1000 w. Engng & Con—March 27, 1912. No. 31617.

Mileage and Cost of Public Roads in the United States in 1909. J. E. Pennybacker, Jr., and Maurice O. Eldridge. Explanation and analysis of mileage and cost statistics. 120 pages. U S Dept of Agri, Bul 41—Jan. 26, 1912. No. 30650 N.

See also Accounting, under INDUSTRIAL ECONOMY.

Crowning

Current Practice in Fixing Pavement Crowns. Daniel B. Goodsell. Describes methods used, effect of car tracks, and conclusions. 1200 w. Engng & Con—April 24, 1912. No. 32324.

Culverts

Culvert Practice in Road Building in Connection with Drainage Ditching in Minnesota. Extracts from a paper by W. R. Hoag, read before the Minn. Soc. of Survs. & Engrs. Gives valuable data on culvert practice. Ills. 1000 w. Engng & Con—April 24, 1912. No. 32327.

Delaware

The Coleman du Pont Road Across Delaware. Describes the 106-mile highway built to prove General du Pont's views of road finance. 3500 w. Eng Rec—Jan. 13, 1912. No. 29593.

The Coleman du Pont Highway Through the State of Delaware. Coleman du Pont. Illustrated account of this 110-mile road to be constructed and maintained. 2000 w. Sci Am—March 16, 1912. No. 31169.

Denmark

The Treatment of Roads in Denmark. H. V. Christensen. A report of treating the district roads with tar. 3000 w. Surveyor—Nov. 24, 1911. No. 28661 A.

Dust Prevention

Proposals for Dust Suppression and Road Improvement. Dr. Guglielminetti. Read before the Swiss Motor Club. Discusses conditions in Switzerland and how to meet the expense for needed road improvements. 2200 w. Can Engr—April 18, 1912. No. 32231.

Surface Treatment for Dust Laying and Road Preservation. W. A. McLean. Read before the Ontario Land Surv.'s Assn. Considers the use of oil, asphalt, tar, and special materials. 2500 w. Can Engr—Nov. 30, 1911. No. 28583.

Proposals for Dust Suppression and Road Improvement. Dr. Guglielminetti. Shows the problem to be more or less a question of money. 2500 w. Surveyor—Feb. 23, 1912. No. 31025 A.

Earth

Earth and Sand-Clay Road Construction in Virginia. P. St. John Wilson. Read before the Am. Assn. for Highway Imp. Discusses things to be considered in locating roads, and the essentials of good construction. 2500 w. Engng & Con—Dec. 27, 1911. No. 29254.

England

Road Evolution in England. Reviews five centuries of highway construction and maintenance. The present number deals with roads in Tudor and Stuart times. Ills. 2200 w. Autocar—Jan. 6, 1912. Serial. 1st part. No. 29654 A.

The Main Roads of England. Describes their methods of construction and repair, with special reference to the bad condition of the Great North road and the North-Western highways. Ills. 3000 w. Autocar—March 30, 1912. No. 31873 A.

Experimental

The Barrington, R. I., Experimental Road. Illustrations and comments on a road offering a comparison between different materials. 1500 w. Munic Engng—Dec., 1911. No. 28773 C.

Methods Employed by the New York State Highway Department in Testing Road Stone and Bituminous Materials. Information from the report of the Commission for 1910. 4000 w. Engng & Con—Dec. 20, 1911. No. 29112.

Experimental Road Work of the New York State Highway Commission in 1910. Reviews the work of the past year. 11000 w. Engng & Con—Nov. 15, 1911. No. 28061.

Queens Borough Experimental Road. Describes methods of laying nine different mixtures, and the condition of each after one year's service. 2000 w. Munic Jour—Sept. 26, 1912. No. 36371.

The Experimental Pavements on Hillside Ave., Queens Borough, New York City. Information from the official report of the committee. 3000 w. Engng & Con—July 24, 1912. No. 34774.

The Park Heights Experimental Road, Baltimore, Md. D. M. Avey. Information concerning the road, with results of recent inspection. Ills. 3000 w. Munic Engng—Feb., 1912. No. 30697 C.

France

Road Legislation and Syndic Associations in France. M. de Pulligny. Read before the Am. Road Cong. An account of the legislation that has led to the fine results in France. 2000 w. Engng & Con—Oct. 23, 1912. No. 36959.

Granite

New York's Special Granite Pavement. Illustrates and describes recent work on Fourth avenue. 1800 w. Munic Jour—Oct. 10, 1912. No. 36746.

Gravel

Methods and Costs of Constructing a Stone-Gravel Road on a Sand Sub-grade in Menominee County, Michigan. Illustrated description of methods used, with itemized costs. 2000 w. Engng & Con—March 13, 1912. No. 31178.

Highways

I. The Improvement of Highways to Meet Modern Conditions of Traffic. Jonah Walker Smith. II. Recent Development in Road-Traffic, Road-Construction and Maintenance. Henry Percy Maybury. With abstract of discussion on the papers. Plates. 146 pages. Inst of Civ Engrs—No. 3939 and No. 3946. No. 30494 N.

Road Improvement in the South, Past and Present. Logan Waller Page. Gives an account of early road building, and the present status of road work. 4500 w. Mfrs' Rec—Feb. 22, 1912. (Special.) No. 30746 D.

Mass and Bulk in Highway Engineering. Explains the value of these two primary factors in the mechanics of road crusts. 2000 w. Surveyor — May 10, 1912. No. 32977 A.

Highway Maintenance. Robert D. Kneale. Considers causes of road disintegration, and methods of counteracting them. 2000 w. Jour Assn of Engng Socs—May, 1912. No. 33816 C.

The Relations Between Engineers and Contractors on Highway Work. Onward Bates. Read before the first Am. Road Cong. How to secure economy and efficiency in this field. 3500 w. Eng Rec—Dec. 9, 1911. No. 28704.

Connecting Two Cities by a Roadway 100 Feet Wide Built on Marsh Land. Illustrates and describes improvements in progress, and construction difficulties, in replacing an old plank road between Newark and Jersey City which carries heavy traffic. 2500 w. Eng Rec—Feb. 17, 1912. No. 30468.

New Hampshire Highways. Charles H. Hoyt. Report of an inspection of highways in the State of New Hampshire, Aug., 1911. Contains much information. Ills. 40 plates. 35 pages. U S Dept of Agri, Bul 42—Feb. 6, 1912. No. 30651 N.

New Hampshire's Road System. Illustrates and describes methods of maintaining the improved highways. 1600 w. Horseless Age—Feb. 28, 1912. No. 30866.

State Highway Construction in New York. Editorial review of the report of the State Highway Commission, and discussion of the increased cost of maintenance since the use of motor vehicles. 2000 w. Eng News—Feb. 29, 1912. No. 30941.

New York State Highways. An illustrated account of the organization, methods of maintenance, types of construction and details. 9000 w. Munic Jour—May 16, 1912. No. 32936.

Crest of the Blue Ridge Highway. Joseph Hyde Pratt. Illustrated account of an immense undertaking in road building in western North Carolina. 2500 w. Mfrs' Rec—July 11, 1912. No. 34385.

A Proposed State Highway System of California. Map and description of the proposed system taken from a paper by Austin B. Fletcher, read before the Pacific Highway Assn. 1800 w. Engng & Con—Aug. 28, 1912. No. 35612.

California's State Highway Organization. Information concerning the organization and work now in hand from a paper by Austin B. Fletcher, read before the Pacific Highway Assn. 2500 w. Eng Rec—Aug. 31, 1912. No. 35661.

State Highways in California. Map and account of the organization and work being done by the State Highway Commission. 2000 w. Munic Jour—Sept. 26, 1912. No. 36370.

Trunk Highways in South Dakota. Samuel H. Lea. Report concerning the building of public roads and the construction standards. 2500 w. Munic Jour—Sept. 26, 1912. No. 36369.

Highway Engineering

See Education, under INDUSTRIAL ECONOMY.

Honduras

Transportation Development and Projects in Honduras. Edward W. Perry. Considers conditions affecting the present and future development of the industries. Ills. 3000 w. Engineering Magazine—March, 1912. No. 30832 B.

Legislation

The State Administration of Public Highways in the United States. An explanation of the aid given and the laws regulating the aid in different states. 2500 w. Eng News—March 28, 1912. No. 31633.

Light Traffic

Light Traffic Pavements for Boulevards, Residence Streets and Highways. Linn White, and A. C. Schroder. Also discussion. Deals particularly with work in Chicago. 13500 w. Jour W Soc of Engrs—May, 1912. No. 33686 D.

Location

Methods of Locating a New Highway Over Florida Mountain in the Hoosac Range in Western Massachusetts. Andrew M. Lovis. Explains the problem of improving this highway, describing the existing road and the surveys for this season. 2500 w. Map. Engng & Con—March 6, 1912. No. 31066.

Macadam

Instructions to Engineers of the Illinois Highway Commission for the Construction of Plain and Bituminous Macadam. Abstract from a manual issued for the guidance of engineers. 4000 w. Engng & Con—Aug. 14, 1912. No. 35229.

Connecticut Special Macadam. Gives the specifications and methods of construction of macadam roads developed by the State Highway Commission. Ills. 2000 w. Munic Jour—Sept. 26, 1912. No. 36368.

See Surfacing, under *Roads and Pavements.*

Maintenance

Maintenance of Roads and Pavements. James Owen. Read before the Am. Roadbldrs. Assn. Considers the factors influencing road construction and city pavements, suburban streets, wear, dust, and the financial problem. 3500 w. Eng Rec—Nov. 25, 1911. No. 28292.

The Pavement Repair Problem of the Borough of Manhattan. Daniel B. Goodsell. Explains the machinery of administration by which the work is accomplished and some aspects of the pavement problem in Manhattan. Also discussion. 8000 w. Pro Brooklyn Engrs' Club—Jan., 1912. No. 35485 N.

Street Maintenance in Cape Town. W. J. Jeffries. Extract from the annual report for the year ending June 30, 1911. No. 28759 A.

Some Notes on Road Maintenance in County Armagh. R. H. Dorman. Read before the Inst. of Munic. & Co. Engrs. Gives account of progress and describes methods adopted. Short discussion. 4000 w. Surveyor—Aug. 30, 1912. No. 35878 A.

Road Costs and Maintenance. Arthur H. Blanchard. Read before the first Am. Road Cong. Outlines the relationship existing between costs and maintenance, discussing fundamental principles. 2500 w. Eng Rec—Dec. 2, 1911. No. 28521.

Some Erroneous Estimates of the Cost of Pavement Maintenance. Editorial criticism of the report of the Cambridge (Mass.) commission. 1800 w. Engng & Con—March 13, 1912. No. 31175.

Proper Methods of Recording, Interpreting and Estimating Road and Pavement Maintenance Costs. Aims to show correct methods. 2000 w. Engng & Con—March 20, 1912. No. 31453.

See also Auto Power, under *Roads and Pavements*.

Massachusetts

The State Roads of Massachusetts. Brief history and explanation of current practice. 4000 w. Eng Rec—July 27, 1912. No. 34810.

State Highway Construction and Maintenance in Massachusetts. Arthur W. Dean. Reviews the work of the past 20 years, and discusses the things to be considered in connection with road construction. 4500 w. Jour Assn of Engng Socs —July, 1912. No. 34835 C.

Recent Field Work of the Massachusetts Highway Commission. Illustrated description of two typical jobs now under way in the towns of Nahant and Weston. 3000 w. Eng Rec—Sept. 28, 1912. No. 36398.

Material

Some Considerations on the Choice of a Pavement. Leonard S. Smith. Discusses the considerations affecting the choice, especially the construction, best suited to the service. Ills. 1800 w. Wis Engr—March, 1912. No. 31574 C.

Principles Involved in the Selection of Street Pavement. Abstract of a report prepared by James E. Barlow and Rufus E. Miles, and issued by the Bureau of Municipal Research of Cincinnati, O. 1500 w. Engng & Con—April 10, 1912. No. 31910.

Some Recent Improvements in Street Pavements. G. W. Tillson. Outlines the developments that have led to the types now used, and briefly describes materials, and methods. 6000 w. Pro Engrs' Club of Phila—July, 1912. No. 35346 D.

Methods of Testing Road-making Materials in European Countries. Information from the report of A. Mesnager, to the Int. Assn. for Test. Mat. 9000 w. Engng & Con—Sept. 11, 1912. No. 35910.

Roads and Road Materials of Alabama. William F. Prouty. A compilation of various articles by different authors, aiming to stimulate interest in the building of good roads, and giving much practical information. Ills. 148 pages. Geol. Surv. of Ala, Bul. No. 11. No. 28221 N.

Considerations Affecting the Selection of Types of Pavements Best Adapted for Use Upon a Given Street. Reprint from a report by a commission appointed to consider street improvements for Cambridge, Mass. Discusses factors that should be considered in selecting the character of the pavement for any street. 5500 w. Engng & Con—Dec. 20, 1911. No. 29111.

See Rock Testing, under *Measurement*, and Tube Milling, under MINING AND METALLURGY, *Ore Dressing and Concentration*.

Methods

Adaptability of Roads and Pavements to Local Conditions. Nelson P. Lewis. Read before the Am. Road Bldrs. Assn. Discusses the chief considerations and states conclusions. 3500 w. Engng & Con—Nov. 22, 1911. No. 28224.

Our Disgraceful Paving Methods. J. R. Shuman. A critical comparison of pavements in Europe and America, especially commending work in Liverpool. 2500 w. Yale Sci M—Nov., 1911. No. 28239 C.

Paving Over Gas Mains and Capitalization of Profitable Contracts as Elements in Rate Making: Decision of the New York Public Service Commission in the Kings County Lighting Case. 3000 w. Eng News—Nov. 16, 1911. No. 28088.

Minnesota

The Road Material Resources of Minnesota. George W. Cooley. Information concerning material available and its location, with tests of rock samples, and related topics. Map & Ills. 7000 w. U S Dept of Agri, Bul 40—Dec. 16, 1911. No. 29819 N.

New Jersey

Public Roads, New Jersey, U. S. A. E. A. James. Illustrates and describes types of pavement adopted, giving costs. 1200 w. Can Engr—June 20, 1912. No. 33909.

Work of New Jersey's State Department of Public Roads. Explains the organization scheme and experience with various types of construction. Ills. 2200 w. Eng Rec—Sept. 28, 1912. No. 36397.

Oil-Macadam

The Failure of Certain Expensive Oil Macadam Roads in Los Angeles County, California. A critical discussion of the work of the old Los Angeles Co. Highway Commission. Ills. 1200 w. Engng & Con—Feb. 28, 1912. No. 30858.

The Mud Nuisance on Oiled Macadam Roads. A letter from K. F. Postle, giving information concerning California roads. 2500 w. Eng News—June 6, 1912. No. 33493.

Methods of Surface Oiling and Constructing Oil Macadam at Oakland, Cal. Abstract of paper by William J. Baccus read before the League of California municipalities. Concerning methods, costs, and results. 2000 w. Engng & Con—Oct. 16, 1912. No. 36862.

Pittsburgh

Some Important Street Improvements in Pittsburgh. An illustrated account of the grading and street work in progress. 7000 w. Eng News—Sept. 26, 1912. No. 36358.

Reconnaissance

Methods of Making a Reconnaissance for the Meridian Road in South Dakota. Samuel H. Lea. Describes the proposed road, and the methods employed. 1500 w. Engng & Con—Dec. 20, 1911. No. 29110.

Records

Road Records for Engineers. Harry Tipper. Remarks on the kind of data needed, the value of detailed records, local conditions, traffic census, etc. 2500 w. Eng Rec—Sept. 28, 1912. No. 36899.

Reinforced Concrete

Novel Reinforced Concrete Pavement. Illustrates and describes methods and cost of construction. 600 w. Munic Jour & Engr—Dec. 28, 1911. No. 29266.

Repairs

Repair and Renewal of Pavements. J. E. Barlow. Gives a method for determining when it would be more economical to renew a pavement than to repair it. 1500 w. Munic Jour & Engr—Jan. 18, 1912. No. 29695.

Comparative Costs of Various Methods of Paying for Repaving in New York City. Interesting data on the annual cost to property owners under the different plans. 4000 w. Engng & Con—Oct. 23, 1912. No. 36957.

Reports

Report of the Director of the Office of Public Roads for 1911. Logan Waller Page. Reviews the work of the year and outlines plans for future work. 21000 w. U S Dept of Agri—1911. No. 29820 N.

Road Machinery

Distributing and Mixing Machinery for Construction and Maintenance of Bituminous Pavements and Surfaces. Arthur H. Blanchard. Illustrates and describes types of road construction machinery and their use. 4000 w. Munic Engng—Nov. 1911. No. 28329 C.

Saskatchewan

The Administration of the Highway Improvement Vote in Saskatchewan. Abstract of a bulletin, issued by A. J. McPherson, explaining the general policy, the classification, road laws and administration, etc. 3500 w. Can Engr—July 4, 1912. No. 34296.

Scotland

Scottish Roads. Allan Stevenson. Read before the Inst. of Munic. & Co. Engrs. Brief account of methods in Scotland and the improvements needed to meet motor traffic needs. Short discussion. 3000 w. Surveyor—Aug. 30, 1912. No. 35879 A.

Shell

See Surfacing, under *Roads and Pavements.*

Sidewalks

Concrete Sidewalks. S. B. Code. Discusses best method of construction. 2200 w. Can Engr—Jan. 4, 1912. No. 29491.

The Development of Street Pavements and Road Construction as Shown by Patents Granted by the U. S. Government. Fifth article of a series. Deals with sidewalks, cross walks, curbs and gutters. 9000 w. Engng & Con—Nov. 29, 1911. No. 28606.

Slag

The Youngstown (O.) Slag Road. Information concerning the construction and results with this material as used on an experimental road built in 1909. 2500 w. Munic Engng—Feb., 1912. No. 30699 C.

Specifications

Suggestions Towards a Standard Specification for Bituminous-Bound Carriageways. John S. Brodie. Paper and discussion before the Inst. of Munic. & Co. Engrs. 5000 w. Surveyor—Aug. 23, 1912. No. 35749 A.

Some Details and Specifications of the California Highway Commission. Details and specifications for the Morrison's Crossing—Marysville road, showing the general requirements. Ills. 2500 w. Engng & Con—July 3, 1912. No. 34242.

Steam Rollers

Instructions to Operators of Steam Rollers. Gives the instructions issued by the Illinois State Highway Commission. 2500 w. Engng & Con—March 27, 1912. No. 31618.

Stone

Stone Pavements of England and America. Ernest Flagg. From the *Century Mag.* A comparison of pavements and methods of constructing them. Ills. 2500 w. Munic Engng—Feb., 1912. No. 30696 C.

Street Cleaning

Costs of Street Cleaning, Street Watering, Oiling, and Maintenance of Horses at Boston, Mass. Report for the year ending Jan. 31, 1911. 1200 w. Engng & Con—Jan. 17, 1912. No. 29832.

Street Cleaning Methods and Costs at Washington, D. C. Describes the work and gives details of costs. 1800 w. Engng & Con—Dec. 20, 1911. No. 29109.

Street Cleaning Methods and Costs in Several Ohio Cities. Information abstracted from a supplement to the report of the State Board of Health, giving results of an investigation. 3500 w. Engng & Con—Sept. 18, 1912. No. 36023.

Elementary Theory and Principles of Street Cleaning. S. Whinery. Abstract of a paper read before the Am. Pub. Health Assn. Outlines methods of sweeping, washing, etc., and gives estimate of cost. 2200 w. Eng Rec—Oct. 26, 1912. No. 37005.

See also Refuse Disposal, under *Municipal.*

Street Grades

A Proposed Method of Interpreting the Elevations of All Portions of Street Surface from the Established Grades. Herman S. Moore. Abstract of paper read before the Munic Engrs of N. Y. City. Outlines the proposed method and its application. 8000 w. Engng & Con—May 8, 1912. No. 32655.

Street Sprinkling

Street Sprinkling in St. Paul, Minn. C. L. Annan. Explains the method adopted, assessing the cost. etc. Ills. 2000 w. Pro Am Soc of Civ Engrs—May, 1912. No. 33217 F.

Street Sweeper

A Motor-Driven Pneumatic Street Cleaning Machine. Illustrated description of a power machine of the vacuum-cleaner type. 1200 w. Eng News—May 2, 1912. No. 32563.

Automobile Street-Sweepers (Di un Esperimento circa l'Applicazione della Trazione Elettrica alle Spazzatrica Stradali). R. Badoglio. Experiments with electric-traction vehicles. Ills. Serial. 1st part. 3500 w. Industria—Oct. 29, 1911. No. 28477 D.

Street Traffic

Metropolitan Traffic. Editorial review of the last report of Sir Herbert Jekyll containing results of a census of London's traffic. 1800 w. Engng—Dec. 8, 1911. No. 29055 A.

Improving Street Traffic Conditions in Newark, N. J. F. Van Z. Lane. Map, and notes from a report by G. B. Ford and E. P. Goodrich. 3000 w. Eng. News—Sept. 12, 1912. No. 35927.

See also same heading, under *Roads and Pavements.*

Street Tunnels

See Tunnels, under *Construction.*

Surfacing

Crown of Paved Streets. S. Whinery. States the purpose of a street crown and suggests forming a slight ridge at the center to improve the transverse slopes. 1400 w. Eng News—June 6, 1912. No. 33492.

The Strengthening and Improvement of Road Crusts. The Road Board's circular to English and Welsh county councils. 1800 w. Surveyor—Jan. 5, 1912. No. 29669 A.

Surfacing an Existing Road with Steam Rolled Water-Bound Macadam. General directions and specifications. 1500 w. Surveyor—Jan. 12, 1912. No. 29898 A.

Motor Car Traffic and Main Road Crusts. Discusses the value of surface layers. 1800 w. Surveyor—May 24, 1912. No. 33451 A.

Surface Treatment for Highways Under Special Conditions. From a paper by William H. Connell read at the Am. Road Cong. A summary of special surface treatments. 1000 w. Engng & Con—Oct. 16, 1912. No. 36863.

Treated Roads Laid Down in the Central District, Stirlingshire, Under the Grant from the Development and Road Improvement Funds Act, 1909, During the Year Ending May 15, 1912. D. R. Cox. Report concerning rocmac and tar-macadam surfaces. Discussion. 4000 w. Surveyor—June 21, 1912. No. 34214 A.

Surface Treatment of Park Roads in Washington, D. C. Spencer Cosby. Read before the Am. Assn. for the Adv. of Science. Brief explanation of methods tried and results. 2500 w. Engng & Con—Jan. 31, 1912. No. 30144.

Shell Roads. W. W. Crosby. Read before the Am. Assn. for the Adv. of Science. Gives specifications explaining methods of using this material for road surfacing. Ills. 3000 w. Engng & Con—Jan. 3, 1912. No. 29378.

Bitucrete Pavement. A. E. Schutte. Explains the problems in constructing roads to stand both horse and motor traffic, and gives results with this material, describing method of construction. 2200 w. Munic Engng—April, 1912. No. 33108 C.

The Relation of Modern Road Surfacings to Fish Life. W. J. A. Butterfield. Read before the Inst. of Munic. & Civ. Engrs. An investigation of the effect of surface workings from roads on the fish life of streams into which they pass. Also discussion. 15000 w. Surveyor—Feb. 16, 1912. No. 30793 A.

See also Bituminous, under *Roads and Pavements.*

Surveys

See Surveying, under *Measurement.*

Systems

Peel County Roads. C. R. Wheelock. Read before the Ontario Good Roads Assn. Describes the system adopted, said to be one of the best in the province. 1500 w. Can Engr—March 14, 1912. No. 31202.

Tar

Changes Noted in a Tar Exposed to Traffic and Weathering When Used in a Road Surface. W. W. Crosby. Report of an investigation made. 1800 w. Surveyor —April 5, 1912. No. 31987 A.

Minor Problems of Tarred Roads. Francis G. Wickware. Interesting review of the advantages and disadvantages of tarred roads, discussing the effect on the eyes, on vegetation, injuries to fish life by storm waters from tarred surfaces, and related subjects. 5000 w. Munic Engng—Sept., 1912. No. 36320 C.

Tar-Concrete

History of Tar-Concrete Pavements in Ontario. W. A. McLean. Read before the Am. Soc. for the Adv. of Science. Gives specifications and report of the work. 4500 w. Engng & Con—Jan. 3, 1912. No. 29379.

Temperature

Temperature of Pavements. Howard C. Hottel. Gives results of tests on the absorption and radiation of heat by sheet asphalt, asphalt block, wood block, brick, and granite block. 1000 w. Munic Jour & Engr—Jan. 11, 1912. No. 29548.

Testing

Testing Road Metal. Brief illustrated description of machines employed and methods of using them. 1500 w. Munic Jour—Aug. 22, 1912. No. 35384.

Treatment

See Denmark, under *Roads and Pavements.*

Width

Street and Roadway Widths, with Especial Reference to Conditions in Chicago. H. J. Fixmer. Discusses the importance of standardizing both street and roadway widths. 2500 w. Engng & Con—Nov 22, 1911. No. 28225.

Wood

Experiments of French Engineers for Improving the Strength of Wood for Pavements. Description of experiments and resulting conclusions taken from a paper by M. P. Labordere and M. F. Austett, read before the Int. Assn. for Test. Mat. 3000 w. Engng & Con—Aug. 28, 1912. No. 35614.

Wood Block

The Testing of Wood Paving Blocks. F. Kleeberg. Information concerning the requirements for such blocks in Manhattan, the tests and experiments made on deliveries and related matters. 3000 w. Munic Engng—May, 1912. No. 33191 C.

Wood Block Pavements from Construction Standpoint. Day I. Okes. Read before the Wood Preservers' Assn. Considers the construction of creosoted block pavement. 1200 w. Munic Engng—April, 1912. No. 33107 C.

Methods and Cost of Constructing a 3-in. Creosoted Wood Block Pavement at Longview, Texas. P. E. Green. A report of the work. 2500 w. Engng & Con—May 15, 1912. No. 32908.

Creosoted Wood Block Pavement with Cement Grout Filler. A. J. Schafmayer. Read before the Ill. Soc. of Engrs. & Survs. Facts about certain features of the design and construction of a pavement laid in Chicago in 1911. 2500 w. Eng Rec—Feb. 10, 1912. No. 30348.

Wood Paving Experiments in Minneapolis. A progress report giving the results of four years' heavy traffic. 2500 w. Eng Rec—Jan. 27, 1912. No. 30065.

The Creosoted Wood Block Pavements of Chicago Loop District—A Review. William W. Marr. An illustrated review of the work. 5500 w. Engng & Con—April 10, 1912. No. 31909.

The New Specifications of the Board of Local Improvements of Chicago, Ill., for Creosote Wood Block Pavement. 3000 w. Engng & Con—July 17, 1912. No. 34607.

See also Timber, under *Materials of Construction.*

WATER SUPPLY

Algae

The Dissolved Gases of the Inland Lakes of Wisconsin and their Biological Significance. Abstract of a Monograph by Dr. Edw. A. Birge and Chauncey Juday, bearing upon the growth of algae, with remarks by George C. Whipple. 2000 w. Eng News—Nov. 9, 1911. No. 27756.

Aqueducts

An Aqueduct Two Hundred and Forty Miles Long. Burt A. Heinly. Illustrations and brief description of the steel and concrete siphons which will supply Los Angeles with water. 700 w. Sci Am—May 25, 1912. No. 33047.

The Location and Design of Conduits on the Los Angeles Aqueduct. Describes method used for determining economical gradients. Ills. 1800 w. Eng Rec—Dec. 16, 1911. No. 28994.

Construction on the Los Angeles Aqueduct. Illustrated review of methods of excavating and concreting in desert land. 3000 w. Eng Rec—Jan. 6, 1912. No. 29408.

Preventing Leakage from the Washington Aqueduct at Cabin John Bridge. Describes lining the old brick conduit with cast-iron segments plastered with mortar on the inside and grouted from the outside. Ills. 2000 w. Eng Rec—March 9, 1912. No. 31091.

Hydraulic and Thermic Questions relative to the Pugliese Aqueduct (Questioni idrauliche e termiche relative all' Acquedotto Pugliese). S. Revere. Determination of coefficients of temperature conductivity, etc., in metal and cement pipes. 5400 w. Monit Tecnico—Oct. 20, 1911. No. 28481 D.

Repairs to the Masonry of the Mauvages Aqueduct on the Canal from the Marne to the Rhine (Réfection des maconneries du souterrain de Mauvages sur le canal de la Marne au Rhin). M. F. Launay. States how earth settlement caused deformation in the walls, and illustrates the mode of repair adopted. Plate. 3600 w. Ann d Ponts et Chaussées—May, June, 1912. No. 34568 E + F.

Equipment for Driving an Aqueduct in Southern Italy (Einrichtungen zur Herstellung eines Wasserstollens in Süditalien). Herr Hermans. The plants used in the five shafts and headings of this 260 kilometer tunnel. Ills. 1800 w. Glückauf—Aug. 31, 1912. No. 36136 D.

See also Catskill Aqueduct, and Pipe Flow, under *Water Supply*.

Artesian Supply

The Diminishing Artesian Water Supply of Australia. Editorial on the conditions and the supposed cause of decline. 2000 w. Engng—Dec. 1, 1911. No. 28782 A.

Bogota

Water Supply for the City of Bogota (Servicio de aguas de la ciudad de Bogota). M. J. Peña. Describes the various river resources. 1600 w. Anales de Ingenieria, Colombia—Dec., 1911. No. 30644 D.

Bohemia

The Government Water Works in Bohemia (Staatliche Wasserbauten in Böhmen). Hugo Franz. Description of the system. Ills. 8000 w. Zeit d Oest Ing u Arch Ver—Oct. 13, 1911. No. 28458 D.

Bombay

Bombay Water Supply. An account of important waterworks extensions about to be carried out, as outlined from a report by H. J. Trivess Smith. 1800 w. Engr, Lond—July 26, 1912. No. 35172 A.

Booster Service

See Water Works, under *Water Supply*.

Bridlington

The Bridlington Waterworks. Sidney Charlesworth. Read before the Inst. of Munic. & Co. Engrs. Reviews the history and describes the present plant. 2500 w. Surveyor—July 12, 1912. No. 34714 A.

Catskill Aqueduct

Catskill Water System of New York City. Percy C. Barney. Brief review of the history of the municipal water supply, with illustrated detailed description of the development now under construction. 9000 w. Pro Brooklyn Engrs' Club, Paper 94—Jan., 1911. No. 28980 N.

City Aqueduct to Deliver Catskill Water Supply to the Five Boroughs of Greater New York. William W. Brush. States the problem to be solved, the investigations made, giving a description of the conduit system as recommended. Ills & Maps. 12000 w. Pro Brooklyn Engrs' Club, Paper 95—Jan., 1911. No. 28981 N.

The Sanitary Problems of the Catskill Aqueduct. Dr. David S. Flynn. The sanitary problems relate to housing the workmen, mostly foreigners, and regulating their modes of living. 4000 w. Pro Engrs' Club of Phila—Oct., 1911. No. 27683 D.

Geological Problems, Presented by the Catskill Aqueduct of the City of New York. J. F. Kemp. Abstract of lecture. Describes the geological formation of the region through which the aqueduct is constructed, and some of the difficulties encountered. 2500 w. Qr Bul of Can Min Inst—Oct., 1911. No. 30048 N.

Electric Power in Building the World's Greatest Aqueduct. J. M. Matthews. Illustrated description of the motor driven machines and their work on the Catskill Aqueduct. 5500 w. Engineering Magazine—Nov., 1912. No. 37109 B.

The Storm King Crossing of the Hudson River, by the New Catskill Aqueduct, of New York City. J. F. Kemp. An interesting account of exploration work to determine the depth of bed-rock, and of other geological features of the tunnel. Ills. 2500 w. Am Jour of Sci—July, 1912. No. 34367 D.

The Removal of Entrained Air from the Catskill Aqueduct. Explains the effects of entrained air and the design of air remover. 1200 w. Eng Rec—Aug. 3, 1912. No. 35022.

The Hudson River Crossing of the Catskill Aqueduct. Robert Ridgway. Describes the problem and field studies which determined the location of the crossing, and some interesting features of the construction. Ills. 9000 w. Jour N Eng W-Wks Assn — Sept., 1911. No. 28216 F.

See also Tunnels, under *Construction;* Meters, under *Measurement*, and Reservoirs, under *Water Supply.*

Check Valves

Special Check Valves on City and Factory Water Supply Interconnections, Auburn, N. Y. J. Walter Ackerman. Describes the valves and the conditions that led to their installation. 1000 w. Eng News—June 13, 1912. No. 33710.

Colorado River

I. How the United States Spent a Million Dollars in an Ineffectual Attempt to Control the Lower Colorado River. H. T. Cory. II. A Reply to Mr. Cory's Article on Work on the Colorado River Break in 1911. J. A. Ackerson. III. Editorial. Map & Ills. 11800 w. Eng News—Dec. 7, 1911. No. 28648.

Concrete Pipes

A Large Concrete Pressure Pipe. F. W. Hanna. Illustrates and describes the Forest Pipe Line of the Boise Project. A 1¾ mile reinforced-concrete line under about 70-foot head. 3500 w. Eng News —Aug. 8, 1912. No. 35097.

Conduits

Jones Falls Conduits, Baltimore. Illustrates and describes the plan for carrying a large stream through the center of Baltimore. 3000 w. Munic Jour & Engr—Nov. 29, 1911. No. 28614.

Enclosing a Sewage-Laden Stream in a Triple-Barrel Concrete Conduit. Illustrates and describes the construction of the Jones' Falls conduits at Baltimore. 3000 w. Eng Rec—March 16, 1912. No. 31217.

A Water-Conduit Suspension Bridge, Feurs, France. Illustrated description extracted from an article by M. Betbeder Matibet, in *Ann. des Ponts et Chaus.* 500 w. Eng News—July 25, 1912. No. 34796.

An Economic Study of Water Pipe Line Materials Available for the Proposed Conduit at Port Arthur, Texas. Gives substance of a review by C. C. Crew of materials suited to the conditions, their advantages and disadvantages. 1800 w. Engng & Con—July 31, 1912. No. 35082.

Conservation

Mountain Drainage and Water Regulation (Le sistemazioné montane ed il regime delle acque). Italo Maganzini and Carlo Valentini. A general treatise on the conservation of mountain run-off waters. 1500 w. Ann della Soc d Ing e d Arch Ital—Jan. 1, 1912. No. 31418 E.

Consumption Statistics

Floor Area as a Unit for Estimating Water Consumption. William W. Brush. Explains a method used in New York City in areas occupied by high buildings. 2000 w. Munic Engng—July, 1912. No. 34632 C.

Dam Failures

Failures of the Dalton Concrete Core-Wall Dam, Mineville, N. Y. Illustrated description of this dam and its failure. 1200 w. Eng News—May 9, 1912. No. 32690.

Failure of Dam No. 26, Ohio River. Gives Gen. Bixby's statement, with illustration and drawings. 1500 w. Eng News—Aug. 22, 1912. No. 35401.

Failure of Austin Dam. J. W. Ledoux. A critical discussion of the construction of dams, especially the dam at Austin, Pa., that failed Sept. 30, 1911. Ills. 8500 w. Pro Engrs' Club of Phila—Jan., 1912. No. 30822 D.

Failure of a Low Concrete Dam Near Shippensburg, Pennsylvania. Charles E. Ryder. Illustrated account of a failure due to ice pressure, improper design and construction. 1700 w. Eng Rec—Feb. 17, 1912. No. 30467.

Failure of a Log and Earth Fill Dam at Union Bay, B. C. A. K. Mitchell. Illustrated account of a failure that occurred Feb. 10, 1912. 1500 w. Eng News —Feb. 29, 1912. No. 30942.

The Failure of the Dam of the Erindale Power Company. Francis F. Longley. Brief account of this failure of an earth dam with core-wall of concrete masonry, in Ontario. 1100 w. Eng Rec—April 27, 1912. No. 32887.

The Failure and Repair of the Winston (N. C.) Water Works Dam. J. N. Ambler. Illustrated description with information concerning the disaster and means adopted for repairing. 2000 w. Eng News—April 11, 1912. No. 31934.

The Failure of a Dam on Owasco Lake. A letter from J. Walter Ackerman, with illustrations, briefly describing the failure of a low mill dam, due to lack of maintenance. 500 w. Eng Rec—April 27, 1912. No. 32396.

See also Dams, under *Water Supply.*

Dams

The Design of Masonry Dams. Should Hydrostatic Pressure Underneath and Ice Pressure be Included? Edward Wegmann. Critical discussion of opinions expressed by John R. Freeman in connection with the Austin dams, and giving views of distinguished engineers. 2000 w. Eng News—Nov. 16, 1911. No. 28085.

Provision for Uplift and Ice Pressure in Designing Masonry Dams. C. L. Harrison. A statement of conditions which produce upward pressure in the foundations and in the dam. 1200 w. Pro Am Soc of Civ Engrs—Nov., 1911. No. 28871 F.

Provision for Uplift and Ice Pressure in Designing Masonry Dams. Discussion of the paper by C. L. Harrison. 6000 w. Pro Am Soc of Civ Engrs—Jan., 1912. No. 29954 F.

Provision for Uplift and Ice Pressure in Designing Masonry Dams. Continued discussion of the paper by C. L. Harrison. Ills. 8000 w. Pro Am Soc of Civ Engrs—Feb., 1912. No. 30904 F.

Provision for Uplift and Ice Pressure in Designing Masonry Dams. Continued discussion of the paper by C. L. Harrison. 2500 w. Pro Am Soc of Civ Engrs—March, 1912. No. 32183 F.

Provision for Uplift and Ice Pressure in Designing Masonry Dams. Continued discussion of paper by C. L. Harrison. 3300 w. Pro Am Soc of Civ Engrs—April, 1912. No. 32382 F.

Provision for Uplift and Ice Pressure in Designing Masonry Dams. C. L. Harrison's paper is discussed. 2500 w. Pro Am Soc of Civ Engrs—May, 1912. No. 33220 F.

Recent Studies of Ice Pressures and Their Consideration in Masonry Dam Design. Information from recent discussions and papers bearing on this subject. 5500 w. Engng & Con—June 26, 1912. No. 34100.

Masonry Dams. Edward Wegmann. Historical, theoretical, and practical review and discussion. Ills. 11500 w. Jour Am Soc of Engng Con—Jan., 1912. No. 31431 C.

A Review of Masonry Dam Design and Construction, Illustrated with Cross-Sections of Forty Notable Dams. 8500 w. Engng & Con—May 22, 1912. No. 33044.

The Analytical Determination of the Dimensions of the Gravity Resisting Parts of Masonry Dams. Maurice G. Parsons. Presents formulae for dimensioning multiple-arch dam buttresses. 3000 w. Pro Am Soc of Civ Engrs—May, 1912. No. 33216 F.

The Sloping Face and Upward Pressure in Masonry Dams. F. R. Hayton. Editorial letter commenting on the design of such dams, aiming to show defects 2000 w. Eng Rec—Dec. 30, 1911. No. 29236.

High Dams of Great Length. Reginald Ryves. From a paper read before the Concrete Inst. A study of the mass gravity type and three types of span dams. Ills. Also discussion. 4000 w. Surveyor—March 22, 1912. No. 31722 A.

Elements of Hydro-Resistant Construction and Development of Ultimate Type of Dam. George E. Ladshaw. An outline study. 1000 w. Cornell Civ Engr—May, 1912. No. 33199 C.

Masonry Reservoir Dams: A Simple Formula for Their Design. F. C. Uren. Read before the Inst. of Munic. & Co. Engrs. Reviews the theories and methods of various engineers, and explains the writer's method. General discussion. 2500 w. Surveyor—July 19, 1912. No. 34886 A.

Arch Dam Design: The Constant-Angle Arch Dam. Lars Jorgensen. Analyzes the stresses in a curved dam and describes a new design of arch dam. 2500 w. Eng News—July 25, 1912. No. 34790.

The Influence of Poisson's Ratio on Stresses in Arch Dams. Lars Jorgensen. Examines methods of calculating stresses. 2000 w. Eng News—Aug. 1, 1912. No. 35042.

The Design of Outlet Conduits for High Earth Dams. Winfield Holbrook. From *Univ. of Colo. Jour. of Engng.* Detailed discussion of important points in the design. 1400 w. Engng & Con—Jan. 24, 1912. No. 30102.

An Efficient Cheap Dam. H. D. Mendenhall. Illustrates and describes a type used successfully in the Florida pebble phosphate mining district. 1200 w. Eng News—Feb. 22, 1912. No. 30720.

The Design of Spillway Dams (Sur les Barrages-Déversoir). Richard Muller. Theoretical determinations for the least cross-sectional area of spillway dams. Diagrams. Serial. 1st part. 3000 w. Tech Mod—Aug. 15, 1912. No. 36202 D.

A Discussion of Embankments Which Are Intended to Sustain a Head of Water. Harlan D. Miller. Discusses causes and remedies for stopping excessive seepage and slips in embankments. Ills. 4500 w. Engng & Con—Oct. 23, 1912. No. 36962.

A Concrete-Faced Earth Dam at McAlester, Oklahoma. Illustrated detailed description of the construction. 1000 w. Eng Rec—Aug. 3, 1912. No. 35020.

Four Alternate Designs of Hollow Concrete Dams for Stony River Dam, Grant Co., W. Va. Edward Wegmann. Describes conditions, reports results of investigations of the corrosion of steel in concrete, gives drawing and description of the four designs and reports tests of waterprofing compounds. 3000 w. Eng News—Sept. 5, 1912. No. 35838.

The Hemlocks Concrete Masonry Dam at Bridgeport, Conn. Illustrated description of a structure, 96 feet high. 2500 w. Eng Rec—Sept. 14, 1912. No. 35937.

Method of Constructing Two Concrete Dams in Quick Time; Medina Valley Irrigation Works. E. H. Kearny. Plans and description of work near San Antonio, Tex. Ills. 2500 w. Engng & Con—Oct. 9, 1912. No. 36763.

Ignorance of the Coefficient of Sliding Friction Between Rock Substrata a Cause of Dam Failures. Editorial discussion of the failure at Austin, Pa., and its cause. 2200 w. Engng & Con—Nov. 1, 1911. No. 27689.

The Probable Cause of the Austin Dam Failure. Walter H. Sawyer. Concludes that the failure was due to sliding on joints in the masonry left when the work of one day followed on that of another. Ills. 2000 w. Eng Rec—Nov. 4, 1911. No. 27709.

The Expert Testimony at the Austin Dam Investigation. Gives the written opinions submitted by Prof. F. P. McKibben, and by Alfred D. Flinn concerning the failure of this dam in Pennsylvania. 2000 w. Eng Rec—Nov. 11, 1911. No. 27962.

The Failure of the Austin Dam (La Rupture du Barrage d'Austin). P. Calfas. A French view of the cause of failure. Ills. 4500 w. Génie Civil—Oct. 28, 1911. No. 28490 D.

The Austin Dam Failure. A discussion before the Boston Society of Civil Engineers, Dec. 12, 1911, introduced by a paper by Frank P. McKibben, giving details of construction and discussing the cause of failure. Ills. 14000 w. Jour Assn of Engng Socs—June, 1912. No. 34617 C.

The Austin Dam and Its Failure. T. Chalkley Hatton. Condensed from paper read before the New England W.-Wks. Assn. Also editorial. A statement by the engineer of the structure. 3500 w. Eng News—Oct. 3, 1912. No. 36568.

Repairing the Dam at Hatfield, Wisconsin. Illustrated description of work in which protection of 8000 cu. yds. of concrete placed in winter weather was secured by heating the aggregate and housing in the forms. 2500 w. Eng Rec—July 27, 1912. No. 34804.

The Failure and Repair of a Low Masonry Dam. Illustrated account of a failure at Macdonaldton, Pa., caused by water passing under a dam. 900 w. Eng Rec—Nov. 11, 1911. No. 27963.

State Supervision of Dams and Reservoirs. Frank P. McKibben. Considers how such supervision could be best exercised. 2000 w. Eng Rec—Dec. 16, 1911. No. 28989.

New Regulations Governing the Design and Construction of Dams. Gives regulations issued by the N. Y. State Conservation Commission. Alexander Rice McKim, Inspector of Dams and Docks. 1500 w. Eng Rec—Jan. 20, 1912. No. 29846.

State Control of the Design and Construction of Dams and Reservoirs. Farley Gannett. Discussion of the laws of the various States relative to the subject. 7500 w. Eng Rec—Jan. 6, 1912. No. 29412.

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The Halligan Dam: A Reinforced Masonry Structure. Discussion of the paper by G. N. Houston. 2500 w. Pro Am Soc of Civ Engrs—Jan., 1912. No. 29953 F.

The Halligan Dam: A Reinforced Masonry Structure. Continued discussion of the paper by G. N. Houston. 1500 w. Pro Am Soc of Civ Engrs—Feb., 1912. No. 30903 F.

The Morris Dam of the Waterbury Water-Works. Harry G. Payrow. Illustrated description of the general features and construction of an earth embankment, 100 ft. high, with concrete core-wall and stone-paved upstream slope. 4000 w. Eng Rec—Nov. 25, 1911. No. 28286.

A High Rock-Fill Dam With Concrete Facing in Colorado. Illustrated detailed description of a dam with crest 125 ft. above the Cucharas River valley. 1600 w. Eng Rec—Nov. 4, 1911. Nov. 27714.

Building the World's Highest Dams. C. J. Blanchard. Illustrated descriptions of the Eagle dam on the Rio Grande, and the Arrowrock dam in Idaho. 1600 w. Am Forestry—Dec., 1911. No. 28769 C.

The Santa Maria Hydraulic Fill Dam, Near Creede, Colorado. Brief illustrated description of a dam about 100 ft. high being built for irrigation. 1200 w. Eng News—Oct. 10, 1912. No. 36754.

Construction of Santa Maria Lake Dam. Illustrates and describes this hydraulic-fill dam in Colorado, built from a series of flumes placed near the slopes as they were built up. 2200 w. Eng Rec—Oct. 12, 1912. No. 36779.

Building the Gold Mountain Dam. F. A. Post. Diagrams and description of a concrete dam in California built for stream protection from deposits of tailings. 2000 w. Min & Sci Pr—Dec. 16, 1911. No. 29130.

Construction of the Morena Rock Fill Dam, San Diego County, California. Discussion of the paper by M. M. O'Shaughnessy. Ills. 2200 w. Pro Am Soc of Civ Engrs—Jan., 1912. No. 29952 F.

Construction of the Morena Rock Fill Dam, San Diego County, California. Continued discussion of M. M. O'Shaunessy's paper. Ills. 1500 w. Pro Am Soc of Civ Engrs—March, 1912. No. 32132 F.

The South Haiwee Earth Dam and Reservoir of the Los Angeles Aqueduct. J. B. Lippincott. Illustrated description of the construction. The earth fill, delivered in dump cars, is jetted to place by nozzle streams. 2000 w. Eng Rec—Feb. 3, 1912. No. 30252.

Raising the Sweetwater Dam. Illustrates and describes the method used in raising and reinforcing this masonry dam in California. 1500 w. Munic Jour—May 23, 1912. No. 33062.

A 40-Foot Earth Dam at Dallas, Texas. Eugene Couch. Illustrates and describes methods and costs of creating a 7,000,000,000-gallon reservoir on White Rock creek. 2000 w. Eng Rec—Dec. 23, 1911. No. 29144.

The Mississippi River Lock and Dam No. 1. Illustrated description of the building of a deck type of dam with concrete slabs and depositing mass concrete in forms of concrete cast in heavy concrete forms. 1500 w. Eng Rec—Jan. 20, 1912. No. 29842.

Backwater Effects of Exposed and Submerged Dams on the Rock Island Rapids of the Upper Mississippi River. Charles W. Durham. Sketches and explanations of results in two well authenticated cases. 1000 w. Engng & Con—May 29, 1912. No. 33302.

Damming the World's Greatest River. H. S. Rogers. Illustrated account of the work of harnessing the Mississippi for 200,000 h. p. 5000 w. Sci Am Sup—Aug. 10, 1912. No. 35108.

Failure of Navigable Pass Foundation, Ohio River Dam. Statement of conditions at Dam 26 where the foundation failed on Aug. 8, 1912. Ills. 1400 w. Sci Am Sup—Sept. 28, 1912. No. 36382.

The Kachess Dam on the Yakima River in Washington. Describes an earth 60 ft. high and 1400 ft. long under construction as part of an irrigation project. 2200 w. Eng Rec—Jan. 27, 1912. No. 30068.

Diversion Works for the Arrowrock Dam. Charles H. Paul. Illustrated account of the tunnel works for diverting the waters of the Boise river from the site of the world's highest dam. 2000 w. Eng Rec—April 6, 1912. No. 31816.

The Arrowrock Dam, Boise Irrigation Project, U. S. Reclamation Service. Charles H. Paul. Illustrated description of the site, construction camp and plant, and outline of the work. A rubble concrete dam. 3500 w. Eng News—June 6, 1912. No. 33488.

The Arrowrock Dam, Boise Project, U. S. Reclamation Service; The Highest Dam in the World. From a paper by Charles H. Paul, read before the Idaho Soc. of Engrs. Describes the construction of this dam. Ills. 3500 w. Engng & Con—Aug. 21, 1912. No. 35391.

The Lahoutan Dam on the Truckee Carson Irrigation Project. Illustrates a dam of the earth and gravel fill type with riprapped slopes, describing its construction. 1200 w. Eng Rec—May 18, 1912. No. 32929.

The Hebgen Dam. Harry H. Cochrane. Illustrated description of an important earth-fill dam near Yellowstone Park, which will produce one of the largest artificial reservoir in the United States. 1500 w. Jour Assn of Engng Socs—May, 1912. No. 33817 C.

The New Kensico Dam. Alfred D. Flinn. Illustrated description of this mammoth masonry dam, about 15 miles north of New York City. Gives specifications. 6000 w. Eng News—April 25, 1912. No. 32367.

The Delta Dam and Storage Reservoir for Supplying Water to the Rome Summit Level, New York State Barge Canal. Emile Low. Map and illustrated description of this masonry dam and reservoir and the methods of construction. 8000 w. Engng & Con—June 19, 1912. No. 33818.

The New Loch Raven Dam at Baltimore. A solid masonry dam provided with drainage systems to prevent seepage through the masonry and the upward pressure at the base. Ills. 1500 w. Eng Rec—May 25, 1912. No. 33076.

Method and Cost of Solidifying Fissured Rock by Grouting, Estacada Dam, Oregon. Herman V. Schreiber, in paper before the Nat. Assn. of Cement Users. Describes the grouting of fissured rock for the foundation of a concrete dam. 2000 w. Engng & Con—May 8, 1912. No. 32654.

The Construction of La Boquilla Dam, Mexico; Difficulties Due to Revolution. William B. Fuller. Illustrated account of this large masonry dam. 1100 w. Engng & Con—May 22, 1912. No. 33040.

The Great Dam at Lake Coquittam. Illustrated description of a dam designed to store 175,600 acre feet. 2500 w. Can Elec News—June, 1912. No. 33651 C.

Timiskaming Dam Construction. Abstract from the second annual report of C. R. Coutée, describing this work. Ills. 4000 w. Can Engr—June 20, 1912. No. 33904.

Dams and Reservoirs (Des Barrages-Reservoirs). M. P. Dumas. A suggestion for systems of reservoirs. 8000 w. Ann. des Ponts et Chaussees—Oct., 1911. No. 28497 E. + F.

Arched Dams in New South Wales (Ueber ausgeführte Gewölbe-Talsperren in Neusüdwales). Herr Ziegler. Analytic description of several thin arched dams. Ills. Serial. 1st part. 2200 w. Beton u Eisen—Jan. 3, 1912. No. 30554 D.

An Automatic Dam Crest. F. F. Stickney. Illustrates and describes a crest automatically responsive to a sudden rise of water behind it. 1500 w. Eng News—Feb. 15, 1912. No. 30436.

The Largest Movable Wicket Dam. A. B. Reeve. Illustrated description of the Fernbank Dam on the Ohio River. 1000 w. Yale Sci M—Feb., 1912. No. 30851 C.

A Western Type of Movable Weir Dam. W. C. Hammott. Illustrates and describes this type of dam, rather common in California, discussing the forms in detail. 1500 w. Pro Am Soc of Civ Engrs—May 1, 1912. No. 33219 F.

See also Concrete, under *Construction;* Weirs, under *Water Supply,* and Hydro-Electric, under ELECTRICAL ENGINEERING, *Generating Stations.*

Disinfection

Disinfection Experiments with Hypochlorite of Calcium on the Carnegie Swimming Pool, Yale University. Leo F. Rettger and Samuel C. Markley. An account of experiments and results. 2500 w. Eng News—Nov. 23, 1911. No. 28235.

Ditch Sections

Design of Channels and Ditches of Trapezoidal Sections. H. S. Chuck. Diagrams and explanation of method of determining the proper size or dimensions of a channel. 1500 w. Cornell Civ Engr—May, 1912. No. 33198 C.

See also Flow, under *Measurement.*

Double Supplies

Has the Time Come for Double Municipal Water Supplies, One—Naturally Pure—for Drinking and Cooking, the Other—Denaturized or Sterilized—for All Other Purposes? W. T. Sedgwick and H. P. Letton. Presents the plan as it stands to-day. Also general discussion. 5500 w. Jour N Eng W-Wks Assn—Dec., 1911. No. 29935 F.

Evaporation

California Evaporation Records. Edwin Duryea, Jr. Gives summaries of two series of records. 2500 w. Eng News—Feb. 29, 1912. No. 30937.

Loss of Water by Seepage and Evaporation, Ferre Canal. W. B. Gregory. Report of measurements made in a typical rice irrigation canal to determine these losses. 1200 w Jour Assn of Engng Socs—July, 1912. No. 34834 C.

Evaporation from Irrigated Soils. Samuel Fortier. Gives details of investigations in this field. 2500 w. Eng News—Sept. 5, 1912. No. 35835.

Filtration

Notes on the Design and Operation of Mechanical Filtration Plants. Abstract of a paper by F. B. Leopold, read before the S-W W-Wks. Assn. Calls attention to some of the reasons for the lack of uniform results from the application of this process. 3500 w. Engng & Con—Aug. 28, 1912. No. 35617.

Efficiency in Water Filteration. Illustrates and describes applications of pneumatic filter cleansing methods. 4000 w. Cassier's Mag—Aug., 1912. No. 36298 B.

Grand Rapids Water Filtration Plant. A statement of conditions, with illustrated detailed description of the gravity mechanical filtration plant under construction, having a capacity of 20,000,000 gals. daily, and including provision for softening the water. 4500 w. Munic Jour & Engr—Nov. 1, 1911. No. 27656.

Saskatoon Water Filtration Plant. T. Aird Murray. Illustrated description of a plant for the mechanical filtration of water. 2500 w. Can Engr—Nov. 9, 1911. No. 27970.

The Mechanical Filtration Plant at Minneapolis. Illustrates and describes the chief features in the plant designed to purify the Mississippi water. 6500 w. Eng Rec—Nov. 18, 1911. No. 28090.

Construction of the Minneapolis Filters. W. N. Jones. Illustrated description of the methods used on a force account undertaking. 5000 w. Eng Rec—May 18, 1912. No. 32926.

Minneapolis Mechanical Water Filtration Scheme. A. W. Ellson Fawkes. Illustrated detailed description. 4000 w. Can Engr—April 11, 1912. No. 31958.

The Condition of Old Mechanical Filters. Report upon the plant of Quincy, Ill., which has been in service 20 years. 2000 w. Eng Rec—March 30, 1912. No. 31660.

The Rapid Mechanical Filtration Plant of the Montreal Water & Power Company. Illustrated description of this new plant. The compressed air and water used for washing the filters will be stored in a telescopic tank similar to a gasholder. 2500 w. Eng Rec—March 9, 1912. No. 31085.

The Montreal Filtration Works. Frederick E. Field. Plans and description of works for the double filtration of the St. Lawrence River water. 2000 w. Can Engr—Jan. 18, 1912. No. 29863.

The Rapid Filter Plant at Albany, Oregon. Illustrated description of a modern plant on the Pacific Coast, built in the center of the city to remove turbidity caused by irrigation seepage. 2000 w. Eng Rec—Aug. 17, 1912. No. 35254.

Rapid Filtration Plant at Fort Worth. Illustrated description of a 5,000,000-gallon water purification plant built in 90 days, having a new type of air-wash system with sewer connection. 2000 w. Eng Rec—Aug. 24, 1912. No. 35426.

The Air System of the Queen Lane Preliminary Filters. Charles B. Buerger. Illustrated description of the apparatus at the filter plant in Philadelphia. 1000 w. Eng Rec—June 22, 1912. No. 33877.

Water Purification at Philadelphia During 1910. Reviews the operating results and costs of filtering water at the four municipal plants. 3500 w. Eng Rec—Dec. 2, 1911. No. 28523.

Filtration Results at Albany. Brief description with report of results. 2000 w. Eng Rec—June 22, 1912. No. 33884.

Albany Water Filtration. Review of last year's methods and results. Ills. 3000 w. Munic Jour & Engr—April 11, 1912. No. 31933.

The Louisville Water Filtration Plant. Illustrated description of the reconstruction of a 36,000,000-gal. plant by subdividing the steel tanks and installing a ridge and valley under drain system. 2500 w. Eng Rec—June 1, 1912. No. 33289.

The Evansville Water Filtration Plant. Illustrated description of a purification plant resting on reinforced piles and having novel features of interest. 3000 w. Eng Rec—May 11, 1912. No. 32807.

Extension of Lake Intake vs. Filtration at Evanston, Ill.—Comparative Cost of Steam Turbine and Electric Pumping—General Conclusions and Recommendations. Data from a report by Langdon Pearse and Walter W. Jackson. 4500 w. Engng & Con—Oct. 9, 1912. No. 36761.

Some Notes on Tropical Water Supply and Study of Filtration at Panama. Herman K. Higgins. A discussion by E. W. Clarke of Mr. Higgins' paper. 2200 w. Jour N-Eng W-Wks Assn—March, 1912. No. 32352 F.

The New Filter Gallery at Des Moines. Illustrated description of method of extending the supply by means of reinforced concrete pipe collectors which are separated by quarter-inch lugs. 1500 w. Eng Rec—April 27, 1912. No. 32392.

Operation of the Lakeside, Ohio, Filter Plant. Charles P. Hoover. Reports an experience with secondary bacterial growths following treatment with hypochloride in a filter plant of the rapid sand type. Ills. 1800 w. Eng Rec—Nov. 11, 1911. No. 27957.

The Design of and the Methods and Cost of Constructing a Water Filtration Plant at Niles, Ohio. R. A. Boothe. Plans and description. 5000 w. Engng & Con—Oct. 23, 1912. No. 36960.

Water Purification at Columbus, Ohio. Gives results for the year 1910 at the water softening and filtration plant in this city. 2000 w. Eng Rec—Jan. 13, 1912. No. 29596.

Purifying St. Lawrence River Water at Ogdensburg, New York. Brief illustrated description of a plant of the slow-sand type with a daily capacity of 2,000,000 gals. 2000 w. Eng Rec—Dec. 2, 1911. No. 28519.

The Operation of the Rock Island Filter Plant. Table and chart showing results and physical facts with related information. 1500 w. Eng Rec—Dec. 9, 1911. No. 28705.

Rapid Filters for Cheltenham Water Supply. Information concerning the supply and description of the filtration plant recently put into operation for city supply. 1000 w. Engr, Lond—June 28, 1912. No. 34339 A.

A Centrifugal Clarifier and Filter. Illustrated description of the De Laval machine for clearing oils, varnishes, syrups, extracts and all sorts of liquids. 1000 w. Eng News—Dec. 21, 1911. No. 29116.

How to Obtain Efficiency from Pressure Filters. H. W. Cowan. Read before the Can. Pub. Health Assn. Discusses the progress of pressure filtration. 3000

w. Can Engr—Sept. 26, 1912. No. 36380.

Fire Systems

Management of High Pressure Fire Systems. Committee report presented at the annual convention of the Nat. Fire Protection Assn. 2200 w. Eng Rec—May 25, 1912. No. 33079.

The Maintenance and Operation of High-Pressure Fire Systems. Information from a committee report of the National Fire Protection Assn. 1800 w. Engng & Con—Aug. 3, 1912. No. 35031.

The High Pressure Fire Service System in Baltimore, Md. Map and description of system recently put in service. 1500 w. Eng News—Aug. 1, 1912. No. 35043.

Baltimore High-Service Fire System. Illustrates and describes novel features of the system. 6000 w. Ins. Engng—Aug., 1912. No. 35299 C.

Construction of a High-Service Reservoir at Baltimore, Md. P. A. Beatty. Illustrated detailed description of the construction of the new reservoir, Lake Ashburton. 5500 w. Pro Am Soc of Civ Engrs—Aug., 1912. No. 35626 F.

The Baltimore High Pressure Fire Service. Information from a report prepared by the Nat. Bd. of Fire Underwriters, describing the station and reporting tests. 2500 w. Eng Rec—July 13, 1912. No. 34431.

San Francisco High-Service Fire System. W. H. Ticknor. Illustrated description of the high-pressure gravity supply and auxiliary pumps. 4000 w. Ins Engng—Sept., 1912. No. 36324 C.

Fire Protection of Pier Sheds. Sidney G. Koon. Explaining the value of the automatic sprinkler system for such protection. Ills. 2500 w. Int Marine Engng—Oct., 1912. No. 36442 C.

See also Fire Protection, under *Construction.*

Flumes

Timber Expansion in Flumes; Causes and Remedies. Godfrey Sperling. From *Trans. of Am. Met. Soc.* Describes flumes in Idaho, constructed in 1910, for placer-mining purposes, their partial failure, and reconstruction. 1600 w. Can Engr—April 25, 1912. No. 32443.

Flume Construction in Colombia. R. D. O. Johnson. An illustrated account of methods used in constructing two flumes. 2200 w. Eng & Min Jour—March 30, 1912. No. 31678.

Forecasting

Predicting Water Supply for the Farmer. J. Cecil Alter. Illustrated account of surveys made of snow in the mountains to forecast the summer flow of streams. 1500 w. Sci Am Sup—June 29, 1912. No. 33991.

Gravity Supply

The Gravity Water Supply for Norway, Mich. L. R. Howson. Details of design, construction methods, and unit costs of reinforced concrete standpipe. Ills. 2500 w. Engng & Con—Dec. 13, 1911. No. 28961.

Great Lakes

The Uses of the Great Lakes. Gardner S. Williams. Abstract of a paper read at the Nat. Irrigation Cong. Considers the effects of recent improvements on the level of the lakes, the use of the water for domestic and manufacturing purposes, and for the development of power, etc. 2000 w. Eng News—Dec. 14, 1911. No. 28956.

The Present Quality of the Water in the Great Lakes for Domestic Supply, with Special Reference to Lake Erie at Cleveland. Abstracted from a paper by Capt. J. C. Beardsley, read before the Central States Water Works Assn. 2500 w. Engng & Con—Oct. 2, 1912. No. 36474.

See also Pollution, under *Water Supply.*

Ground Water

An Application of the Ground Water Theory to a Special Case (Applicazione della teoria delle falde idriche ad un caso speciale). C. Fossa-Mancini. Further discussion of the author's previous paper on this theory published Feb., 1910. Ills. 3700 w. Ann della Soc d Ing e d Arch Ital—Dec. 16, 1911. No. 30632 E.

Headgates

New Roller Headgates at the McCall Ferry Plant. Illustrated description of the gates and the operating mechanism. 2000 w. Eng Rec—March 9, 1912. No. 31089.

Ice Troubles

Ice Trouble at the St. Louis Water Works. Edward E. Wall. Illustrated explanation of the cause, and remedy which averted serious trouble. 1200 w. Eng News—Feb. 1, 1912. No. 30236.

Ice Troubles at Buffalo. Henry L. Lyon. An account of conditions and the troubles which it is believed have been controlled. 1200 w. Eng Rec—June 15, 1912. No. 33724.

See also Water Power, under *Water Supply.*

India

The Water Supply of Madras City. Information from J. W. Madeley's report concerning the proposed new works. Maps. 5500 w. Surveyor—Aug. 16, 1912. No. 35467 A.

Intakes

New Water Supply Intake at Denver. Includes reinforced-concrete headworks, sand trap and 2½ miles of 60 in. conduits. Ills. 2000 w. Eng Rec—Oct. 19, 1912. No. 36899.

Construction of Intakes and Discharge Works, Northwest Power Station, Chicago. Brief illustrated description of the double-bore reinforced concrete water tunnel built behind a river dock for intake and drainage. 1200 w. Eng Rec—April 6, 1912. No. 31819.

Irrigation

The Present Stage of Irrigation Development and a Forecast of the Future. Samuel Fortier. Address before the Nat. Irrigation Cong. On the importance of irrigation to the Western States, improvements in practice, etc. 2500 w. Engng & Con—Dec. 13, 1911. No. 28963.

Irrigation Developments in the United States. F. H. Newell. A review of the work as a whole, indicating the method of development. 7500 w. Eng Rec—Dec. 16, 1911. Serial. 1st part. No. 28993.

Resolutions Adopted by the National Irrigation Congress, Dec. 9, 1911. 2500 w. Eng News—Dec. 21, 1911. No. 29122.

The Irrigation Situation. George M. Bull. Discusses irrigation developments in the western United States. 2500 w. Eng Rec—Feb. 24, 1912. No. 30737.

Irrigation Management. F. W. Hanna. Deals with the operation, rather than the maintenance or upkeep, of large irrigation systems. 2500 w. Eng News—Feb. 15, 1912. No. 30434.

Methods of Preparing Land and Applying Water for Irrigation. Considers prevailing practice in the United States. Ills. Engng & Con—Jan. 31, 1912. Serial. 1st part. No. 30146.

Methods of Preparing Land and Applying Water for Irrigation. Describes the check method and the border method. 900 w. Engng & Con—Feb. 28, 1912. No. 30863.

Development of Methods of Draining Irrigated Lands. C. G. Elliott. Considers methods and difficulties. Ills. 5000 w. U S Dept of Agri—Feb., 1912. (Reprint from June 30, 1910, report.) No. 30918 N.

Irrigation Finance. N. E. Webster, Jr. Read before the Nat. Irrigation Cong. Considers requirements for success, describes general methods of financing irrigation projects, and gives a suggested method. 3000 w. Eng Rec—Dec. 30, 1911. No. 29230.

A Convenient and Economical Method of Subdividing Tracts of Irrigated Lands. W. C. McNown. Describes the contour method of land subdivision for irrigated tracts. 900 w. Eng News—Sept. 5, 1912. No. 35839.

The Economic Aspect of Seepage and Other Losses in Irrigation Systems. E. G. Hopson. Discusses the curable and incurable losses, referring to several projects and the cost of lining the canals and methods of preventing losses. Ills. 5000 w. Pro Am Soc of Civ Engrs—Oct., 1912. No. 37148 F.

Results of Seepage Measurements on the Irrigation Canals of the Twin Falls Tract, Idaho. Information from a bulletin of the Univ. of Idaho Agri. Ex. Station by Elias Nelson. 3000 w. Engng & Con—Oct. 9, 1912. No. 36764.

Costs of Mortar Lining on Irrigation Canals. Herbert D. Newell. A statement of the methods used, cost of the work, and results obtained. Ills. 2000 w. Eng News—Oct. 10, 1912. No. 36750.

Irrigation Lessons from the Old World. Sir William Wilcocks. Read before the W. Can. Irrigation Assn. 2000 w. Can Engr—Oct. 3, 1912. No. 36585.

A Diagram for Determining the Area That Can Be Irrigated Under a Given Combination of Lifts by a Given Power. E. A. Moritz. Diagrams with description and illustration of its use. 1000 w. Eng News—Nov. 9, 1911. No. 27755.

Water Efficiency and Its Improvement in Irrigation Systems. F. W. Hanna. Presents data on transportation losses of water, discussing methods of improvement needed. 2500 w. Eng Rec—Nov. 11, 1911. No. 27959.

Chart for Solution of Problems in Irrigating Waters. H. C. Ogden. Gives a chart for irrigation 0.2 feet in depth, explaining its use by examples. 1000 w. Eng Rec—March 9, 1912. No. 31090.

Supplemental Irrigation in the Humid Regions. Abstract from a discussion by Milo B. Williams showing the need of supplemental irrigation in the growing of the more valuable crops. 2500 w. Engng & Con—Aug. 28, 1912. No. 35619.

Methods and Results of Duty of Water Investigation in Idaho. Don H. Bark. Discusses the conditions affecting the duty of water, and explains method of conducting recent investigations and conclusions. 6000 w. Engng & Con—Nov. 1, 1911. No. 27642.

Some Methods of Measuring Irrigation Water Practiced by the U. S. Reclamation Service. From a paper by W. G. Steward, read before the Idaho Soc. of Engrs. Illustrated description of gages and methods used. 3000 w. Engng & Con—Aug. 21, 1912. No. 35390.

Drainage of Irrigated Lands on the Minidoka Project, Idaho. Gives details of the work as described in a paper by Percival M. Fogg, before the Idaho Soc. of Engrs. 3500 w. Eng Rec—Aug. 10, 1912. No. 35121.

Cost of Pumping Plant and of Pumping Water for Irrigation, Minidoka Project, U. S. Reclamation Service. Information from a paper by Barry Dibble, read before the Idaho Soc. of Engrs. 1000 w. Engng & Con—Jan. 24, 1912. No. 30101.

Topographical Surveys on the Canadian Pacific Railway Irrigation Scheme. John Eric Newlands. Explains the object of these surveys and describes methods used. 4000 w. Inst of Civ Engrs—No. 3871. No. 29956 N.

Large Irrigation Projects in the United States (Les grands travaux d'irrigation des États-Unis). Alex. Delisle. The first of the series of articles deals with the Roosevelt Dam and Reservoir project. Ills. Serial. 1st part. 8000 w. Génie Civil—Feb. 3, 1912. No. 30624 D.

Irrigation Projects. F. C. Lyman. Brief notes on reclamation projects being carried out in the western part of the United States. Ills. 1000 w. Yale Sci M—April, 1912. No. 32151 C.

Description of the Prosser Division of the Sunnyside Unit, Yakima Project, United States Reclamation Service. E. A. Moritz. Deals with the construction of a portion of this unit consisting of about 2500 acres involving all kinds of irrigation construction. Ills. 7000 w. Eng News—March 28, 1912. No. 31627.

Enlargement and Improvement of the Main Canal Sunnyside Unit—Yakima Project, Washington. E. A. Moritz and H. W. Elder. Illustrated description of the plans for the enlargement, methods and costs. 5000 w. Engng & Con—Sept. 11, 1912. No. 35913.

Irrigation in the Spokane Valley. L. J. Corbett. Remarks on the changes due to irrigation, with description of methods used and information concerning costs. Ills. 3500 w. Pro Am Inst of Elec Engrs—April 16, 1912. No. 32425 F.

Discussion on "Irrigation in the Spokane Valley." Discussion of L. J. Corbett's paper, at Portland, Ore., April 16, 1912. 2200 w. Pro Am Inst of Elec Engrs—Sept., 1912. No. 36315 F.

The Canadian Pacific Railway Company's Irrigation Project in Alberta. Illustrates and describes a composite dam with earth body and concrete spillway which will divert water from the Bow River. 2500 w. Eng Rec—March 23, 1912. No. 31484.

The Bow Valley Irrigation Works of the Canadian Pacific Railway Company in Alberta. A. S. Dawson. Map and illustrated description of this extensive development. 4000 w. Engng & Con—May 1, 1912. No. 32556.

Irrigation Projects of the Canadian Pacific Railway Company in Alberta. A. S. Dawson. Map and illustrated description of the Calgary project especially. 3500 w. Can Engr—July 18, 1912. Serial. 1st part. No. 34662.

The Irrigation System of the Southern Alberta Land Co., Ltd. Augustine H. Ayers. Map and illustrated account of the work. 2500 w. Engng & Con—April 10, 1912. No. 31913.

The Conveyance of Irrigation Water; Practice in British Columbia. Data from a report by Prof. B. A. Etcheverry dealing with problems of water measurement, conveyance of water, duty and application of water as found in Canadian practice. 3500 w. Engng & Con—Sept. 4, 1912. Serial. 1st part. No. 35798.

Distribution System of Pueblo-Rocky Ford Irrigation Project. Illustrated description of a concrete diversion dam, wood stave pipe line and main distributing canal. 1200 w. Eng Rec—Nov. 18, 1911. No. 28095.

The Colorado River Silt Problem, the Dredge "Imperial" and Irrigation in Imperial Valley, Cal. F. C. Finkle. Map and account of difficulties, with record of operation of the dredge and specifications from which it was constructed. Ills. 5000 w. Eng News—Dec. 14, 1911. No. 28952.

Some Structures and Construction Methods on an Irrigation Project in Sacramento Valley, California. Illustrates and describes this project which will furnish water for 130,000 acres of land. 2500 w. Cornell Civ Engr—May, 1912. No. 33196 C.

The Portneuf-Marsh Valley Irrigation Project in Southeastern Idaho. Illustrates and describes the construction of an earth dam with a clay cut-off wall and a drain trench. 2000 w. Eng Rec—Aug. 17, 1912. No. 35250.

A 6000-acre Irrigation Project on the Arroyo Hondo, New Mexico. Illustrated description of the building of an uncoursed rubble masonry dam and an earthen diversion dam with a buttressed concrete core wall. 1800 w. Eng Rec—Sept. 14, 1912. No. 35941.

Irrigation by Pumping, with Particular Reference to Utilizing Power from Canal Drops. H. J. Kennedy. Extract from an article in the *Purdue Engng. Rev.* Discusses problems and their solutions. Ills.

2500 w. Engng & Con—Dec. 6, 1911. No. 28640.

Suburban Irrigation by Central Stations. R. B. Mateer. Illustrated description of a motor operated pumping installation, near Denver, Colo. 500 w. Elec Wld—Jan. 13, 1912. No. 29648.

Electric Power for Irrigation in Colorado. W. H. Bullock. Considers applications of the commercial squirrel cage induction motor either belted or direct-connected to a centrifugal pump. Ills. 2200 w. Elec Jour—March, 1912. No. 31600.

The Williston and the Buford-Trenton Electric Irrigation Projects. C. P. Eldred. Illustrated description of the transmission of energy directly from lignite coal mines for irrigation pumping. 2500 w. Elec Wld—June 15, 1912. No. 33736.

Application of Hydroelectric Energy to Irrigation Pumping in Southern Idaho. E. A. Wilcox. Illustrated descriptions of various installations, with data on water requirements and considerations governing rates of service. 3000 w. Elec Wld—Oct. 5, 1912. No. 36588.

Hydro-Electric Irrigation Project. H. B. McDermid. Illustrates and describes features of the Minidoka project, Idaho. 2000 w. Power—March 12, 1912. No. 31124.

Combined Irrigation and Hydro-Electric Power Schemes. E. Kilburn Scott. Information concerning the success of such enterprises and their possibilities. 1500 w. Elec Rev, Lond—May 31, 1912. No. 33659 A.

An Irrigation Pumping Plant With Three Lifts for the Snow-Moody Development Co., Payette, Idaho. G. T. Ingersoll. Illustrated detailed description of this irrigation plant and its equipment. 4500 w. Engng & Con—Oct. 2, 1912. No. 36475.

Nikla Irrigation Super-Passage. F. B. Jacomb. Illustrated detailed description of recent works in Egypt, with map and explanation of conditions. 2500 w. Engr Lond—Nov. 17, 1911. No. 28364 A.

Egypt and the Soudan. Editorial review of Lord Kitchener's last report, especially the part dealing with irrigation. 2000 w. Engng—June 7, 1912. No. 33789 A.

Agriculture and Irrigation in Java (Landbouw en irrigatie op Java). R. A. van Sandick. Description of methods employed. 4800 w. De Ingenieur—Oct. 21, 1911. No. 28473 D.

Irrigation in Turkestan. Arthur P. Davis. Abstract of a paper read at the Nat. Irrigation Cong. Information concerning the important irrigation systems. 1500 w. Eng News—Dec. 14, 1911. No. 28957.

Irrigation on the Royal Murgab Estate, Turkestan, Russia. Arthur P. Davis. Illustrated description of this property and the different irrigation projects built. 1500 w. Eng News—April 4, 1912. No. 31797.

The Burrinjuck Irrigation Scheme (N. S. W.). Illustrated description of this large irrigation project, opened July 13th, 1912. 3800 w. Aust Min Stand—July 25, 1912. No. 35313 B.

Irrigation in the Philippine Islands. H. B. Kirkpatrick. Illustrated description of the irrigation systems, giving information concerning the country and crops raised there. 2000 w. Engng & Con—Nov. 29, 1911. No. 28607.

Savage Irrigation in Luzon. Hamilton Wright. Illustrates and describes the wonderful rice terraces of the head-hunting Ifugaos. 1200 w. Sci Am—Feb. 3, 1912. No. 30203.

Irrigation in South Africa. W. A. Legg. Describes conditions and reviews irrigation development in the past and the possibilities of the future. Discussion. 12500 w. Jour Soc of Arts—Feb. 9, 1912. No. 30475 A.

Irrigation in South Africa. Editorial review of a paper by W. A. Legg, read before the Roy. Soc. of Arts. 1800 w. Engng—Feb. 2, 1912. No. 30405 A.

Some Methods and Costs of Irrigation Construction on the Rock Creek Conservation Co.'s Project at Rock River, Wyoming. W. D'Rohan. Illustrated description. 2000 w. Engng & Con—Dec. 27, 1911. No. 29258.

Six Million Dollars for Irrigation. Albert Phenis. Illustrated account of an interesting project in progress in the Medina River Valley in the vicinity of San Antonio, Texas. 3500 w. Mfrs' Rec—March 21, 1912. No. 31447.

See also Tunnels, under *Construction;* Current Meters, and Surveying, under *Measurement;* Line Operation, under ELECTRICAL ENGINEERING, *Transmission,* and Electric Pumping, under MECHANICAL ENGINEERING, *Hydraulic Machinery.*

Leakage

The Cost of Leaks in Water-Works Systems. Edward S. Cole. Read before the Am. W-Wks. Assn. Considers the classes of leakage and gives statistics of consumption and estimate of cost of leakage. 2000 w. Eng News—Aug. 22, 1912. No. 35403.

Leakage Tests of 36-Inch Cast Iron Pipe at Columbus, Ohio. John H. Gregory. Describes the pipes, gives the specification requirements, and report of tests. 1200 w. Eng Rec—April 20, 1912. No. 32193.

Methods and Cost of a Leakage Survey for Lancaster, Pa., Water Works. F. H. Shaw. Explains conditions and the inspection work found necessary. 1700 w. Munic Engng—July, 1912. No. 34633 C.

Making a Leakage Survey. F. H. Shaw. Describes methods used and states cost. Ills. 1500 w. Munic Jour — June 20, 1912. No. 33901.

Leakage in Cast-Iron Water Pipe. E. G. Bradbury. Digest of a paper before the Ohio Engng. Soc. Information concerning the waste from this source. 3000 w. Eng Rec—Feb. 3, 1912. No. 30258.

Methods for Testing New Cast Iron Water Pipe Lines for Leakage, and Amount of Leakage to Be Expected on Good Work. Abstract of a paper by E. G. Bradbury before the Ohio Engng. Soc. Discusses methods. 1800 w. Engng & Con—Sept. 4, 1912. No. 35796.

London

Future Supplies of Water for London. Information from the report of the Works and Stores Committee of the Metropolitan Water Board on a scheme for increasing the supply of water north of the Thames. 1500 w. Engr, Lond—May 24, 1912. No. 33467 A.

The Research Work of the Metropolitan Water Board. From Dr. Houston's latest report, dealing with experiments to determine whether disease germs are present in the water, and the pre-treatment needed to destroy them before entering the storage reservoir. 2500 w. Surveyor—April 5, 1912. No. 31988 A.

The Metropolitan Water Supply. Editorial review of the scheme in progress to increase the supply, giving map, sections and plan of the Island Barn Reservoir. 1500 w. Engng—Nov. 10, 1911. No. 28130 A.

Malaria

Screening as an Anti-Malaria Measure. Dr. A. J. Orenstein. On the value of screened dwellings in malarial regions. 2000 w. Eng Rec—June 29, 1912. No. 34119.

Mine-Water

Treatment of Mine-Water from the Ashio Copper Mine. Joseph W. Richards. Explains conditions at this mine in Japan, and describes methods used to purify and clarify the water before it enters the Watarese river. Ills. 800 w. Bul Am Inst of Min Engrs — June, 1912. No. 34053 F.

Minnesota

Water Resources of Minnesota. George A. Ralph. Descriptive review of the extensive resources. Ills. 1500 w. Jour Assn of Engng Socs—May, 1912. No. 33814 C.

Municipal Supply

See Double Supplies, under *Water Supply*.

New York

Water Resources of the State of New York. Walter McCulloh. Remarks on the work of the State to regulate and control the water resources, especially the investigation of the water powers of the State and their general development and improvement. Maps and Ills. 7000 w. Jour Assn of Engng Socs—Oct., 1911. No. 27674 C.

The Water Works of New York. Edward Wegman. Read before the Am. W-Wks. Assn. Reviews briefly the development of works for the water supply of New York City. 1400 w. Munic Engng —Aug., 1912. No. 35333 C.

Ozone

The Production and Utilization of Ozone in Europe. John B. C. Kershaw. Illustrates and describes various kinds of ozonizing apparatus, and considers some of the uses. 2500 w. Elec Wld—Nov. 11, 1911. No. 27990.

Panama

See Tropics, under *Water Supply*.

Pipes

Aqueduct Tunnel and Cement Lined Pipe. A. O. Doane. A pressure tunnel lined with concrete, and steel pipe lined, with cement mortar, are described. Constructed for the Metropolitan Water and Sewerage Board of Massachusetts. Ills. 2500 w. Munic Jour & Engr—Dec. 7, 1911. No. 28723.

Steel Siphons for New York's Water Supply. Illustrates and describes the supports, tests and coatings of the pipe line portions of the new water supply work. 600 w. Ir Age—Feb. 29, 1912. No. 30854 C.

Laying a Water-Works Intake Line in 65 Feet of Water. Plan and description of work at Marquette, Mich. 1500 w. Eng Rec—June 29, 1912. No. 34117.

The Construction of Pipe Arches (Ueber die Ausbildung von Rohrbogen). A. Bühler. Considerations for coefficients of velocity, temperature, etc., in laying out such arches for water lines along bridges and other occasions for rises in gradient. Ills. 2500 w. Schweiz Bau—June 8, 1912. No. 34528 D.

Pipe Questions at the International

Hygiene Congress in Dresden, and Actual Conditions (Die Rohrfrage auf der Internationalen Hygieneaustellung in Dresden und in der Praxis). G. Blanchart. Discusses the views on corrosion placed before the congress, and illustrates actual conditions. Ills. 1800 w. Stahl u Eisen—Feb. 29, 1912. No. 31323 D.

Pipe Questions at the International Hygiene Congress in Dresden (Die Rohrfrage auf der Internationalen Hygiene-Ausstellung in Dresden). O. Kröhnke. Replies to previous article by Herr Blanchart, and additional notes to article by the author at an earlier date. Ills. 1400 w. Stahl u Eisen—March 7, 1912. No. 31342 D.

Pipes for Conveying Water. Information on pipes for conveying water under heavy hydraulic pressure. 1200 w. Mech Wld—Aug. 16, 1912. Serial. 1st part. No. 35475 A.

The 48-Inch Continuous Wood Stave Main Absecon Station to Atlantic City, N. J. George L. Watson. Gives a general description of the line, the construction of the pipe and the building of the main, cost data, discussions, etc. Ills. 13000 w. Jour Am Soc of Engng-Cont—Sept., 1912. No. 37023 C.

See also Concrete Pipes, Intakes, and Wood Pipe, under *Water Supply*.

Pipe Corrosion

The Relative Corrosion of Iron and Steel Pipe as Found in Service. (Abstract.) William H. Walker. Also discussion. Results seem to show that there is no difference. 1300 w. Jour N Eng W-Wks Assn—March, 1912. No. 32353 F.

Corrosion of Artesian Well Casing in New South Wales. An account of the corrosive action of the Coonamble bore waters and the efforts to find a casing that will resist it. 2000 w. Eng Rec—May 18, 1912. No. 32927.

Electrolysis from Stray Electric Currents. Albert F. Ganz. Abstract of paper read before the Am. W.-Wks. Assn. Explains the sources of such currents, their dangers and the damage, and remedial measures. 4000 w. Eng Rec—June 15, 1912. No. 33723.

Electrolysis from Stray Electric Currents. Albert F. Ganz. Read before the Am. W-Wks. Assn. Considers the cause and the dangers from stray currents and also the remedy. 3500 w. Munic Engng—Aug., 1912. No. 35332 C.

Pipe Design

A New Method for Determining Economical Pipe Diameters. Frank H. Carter. Gives diagram and explanation. Mathematical. 2000 w. Eng Rec—Dec. 16, 1911. No. 28997.

Pipe Failures

Breaks in Detroit Water Mains. Information from engineer's reports of failures, discussing the cause and suggesting a remedy. 7000 w. Eng News—Oct. 24, 1912. No. 36994.

Breaks in Large Water Mains at Detroit. Two reports dealing with the effects of water hammer and other contributory causes of damage. 3000 w. Eng Rec—Aug. 24, 1912. No. 35424.

The Causes of Breaks in Large Water Mains and Available Preventive Measures; with Special Reference to the Detroit Water Works System. From a report by Gardner S. Williams. 1400 w. Engng & Con—Sept. 25, 1912. No. 36352.

Pipe Flow

Loss of Head in Screw Pipe Elbows and Tees. Gives results on comparable bases of four sets of experiments. Ills. 1000 w. Cornell Civ Engr—Dec., 1911. No. 29076 C.

Mixing, Diluting or Contaminating Effects with Liquid Flow in Pipes. Ernest W. Schoder. Gives results of oil flow tests and flow of water in pipe lines. 1500 w. Cornell Civ Engr—Dec., 1911. No. 29078 C.

Experiments on the Flow of Water in Wood Stave Pipes. Discussion of the paper by E. A. Moritz. 4000 w. Pro Am Soc of Civ Engrs—Dec., 1911. No. 29943 F.

Measuring the Flow of Water in Large Pipe Lines. R. M. Hosea. Illustrated description of a device and methods used at Pueblo, Colo. General discussion. 4500 w. Jour W Soc of Engrs—Jan., 1912. No. 30815 D.

Coefficients of Flow in Wachusett Aqueduct. James A. Cushman. Brief outline of the history and description of this aqueduct, giving results of measurements taken and proposing formulae deduced from them. 2000 w. Eng News—Aug. 29, 1912. No. 35649.

Pipe Laying

Laying Water Mains Under Streams. M. L. Worrell. Read before the Am. Water Wks. Assn. Describes work at Rome, Ga. Ills. 1500 w. Munic Engng—Sept., 1912. No. 36322 C.

Pipe Obstructions

Detecting Obstructions in Fire Service Mains. Frederick C. Moore. Explains method of testing and recording. 1200 w. Eng Rec—June 8, 1912. No. 33624.

Pipe Protection

Protection of Steel Pipes in Catskill Aqueduct. Alfred D. Flinn. Describes the pipes and the methods of jacketing them with concrete and lining with Portland cement mortar. Ills. Short discussion. 3500 w. Jour N Eng W-Wks Assn —Sept., 1911. No. 28217 F.

Protecting Pipe Lines Against Alkali. C. P. Bowie in Western Engng. A problem in the western part of the United States to adequately protect pipes against alkaline soils is discussed. 1700 w. Can Engr—May 23, 1912. No. 33142.

Pipe Thawing

Thawing 6-in. Water Main Under East River, New York. Describes thawing by electricity the main from 140th street to North Brother Island. Ills. 1000 w. Elec Wld—March 23, 1912. No. 31508.

Methods of Thawing Frozen Service Pipes, and Distributing the Cost Thereof. A topical discussion. 3000 w. Jour N.-Eng W.-Wks Assn—June, 1912. No. 34032 F.

Pipe Welding

Welding of High Pressure Pipe Lines. Leon B. Jones. Describes methods used in the recent installation of an 8-in. high pressure line in San Francisco. Ills. 3500 w. Am Gas Lgt Jour—Oct. 21, 1912. No. 36906.

Plumbing

Water Supply to a Sky-Scraper. Illustrated description of details of hot, cold, and ice water service in the Singer Building. An arrangement of tanks on different floors to avoid excessive pressures on plumbing. 2200 w. Met Work—Nov. 17, 1911. No. 28103.

Plumbing in New York Public Library. Illustrates and describes provisions for water supply, fire protection, and waste disposal. 2000 w. Met Work—Jan. 5, 1912. Special. No. 29394 C.

Pollution

The Self-Pollution of Water by Natural Growths. J. H. Garrett. Read before the Inst. of Water Engrs. Briefly considers these troublesome organisms, and their effect on water supplies. 1600 w. Surveyor—July 5. 1912. No. 34465 A.

The Problem of Sewage Sludge in Natural Watercourses—Measures of Prevention and Relief. Langdon Pearse. Discussion given before the American Public Health Assn. Considers the relation of sludge deposits to nuisance and the cure. 2200 w. Engng & Con—Oct. 2, 1912. No. 36473.

Permissible Limits of Sewage Pollution as Related to New York Harbor. George A. Soper. Read before the Am. Pub. Health Assn. 3500 w. Eng Rec—Sept. 28, 1912. No. 36402.

Water Pollution Control in Ohio. Gives the greater part of the opinion of the Court, compelling cities and villages to establish sewage purification plants. 4000 w. Eng News—July 11, 1912. No. 34400.

The Problem of the Great Lakes. Discusses the contamination of the waters by sewage and recent investigations of the extent of the pollution. Ills. 3000 w. Can Engr—Dec. 28, 1911. No. 29265.

Pollution of the River Tame. John D. Watson. Condensed paper presented before the Nat. Assn. for Preventing Pollution of Rivers and Waterways of the U. S. Describes the pollution of this British river and the elaborate system for remedying the trouble. Map. 3500 w. Eng News—Feb. 8, 1912. No. 30356.

West Riding Rivers and Trade Effluents. A review of the seventh report of the Royal Commission on Sewage Disposal on "Trade Effluents." 2500 w. Engng—April 12, 1912. Serial. 1st part. No. 32278 A.

The Prevention of the Pollution of Canadian Surface Waters. T. Aird Murray. On the necessity of federal control; typhoid fever and stream pollution; and sewage purification and sterilization. 4000 w. Can Com of Conservation—May, 1912. No. 33183 N.

Contamination of the Water Supply at Memphis, Tenn., by the April Mississippi Floods. Paul D. Fuqua. Gives a short description of the city water supply, the city's drainage and sewerage, and how the contamination occurred. Ills. 3000 w. Eng News—June 13, 1912. No. 33708.

Acids in the Monongahela River. Thomas P. Roberts. On the evils resulting from the use of water courses for carrying away harmful fluid discharges from mines and mills, and observations on the phenomena attendant upon acids in the Monongahela River. Discussion. Ills. 21000 w. Pro Engrs' Soc of W Penn—Nov., 1911. No. 28793 D.

Sanitation of Water Supplies, Abstracts of papers and discussions before the Int. Cong. on Hygiene and Demography, dealing with the sanitary protection of water supply drainage areas, and with water treatment. 7500 w. Eng News—Oct. 17, 1912. No. 36891.

See also Mine Waters, and Sanitation, under *Water Supply*.

Port Arthur, Can.

Port Arthur Water Supply. Report of T. Aird Murray on a possible future supply for this growing city of Ontario. 2500 w. Can Engr—Aug. 8, 1912. No. 35132.

Pumping Station

Electric Irrigation Pumping in Southern California. An account of operating experiences of pumping plants in the

Pomona district. Ills. 4500 w. Elec Wld—June 8, 1912. No. 33611.

Central Station Power for Municipal Pumping. Presents advantages and gives data on a large number of plants. Ills. 5000 w. Elec Rev & W Elect'n—June 1, 1912. No. 33384.

Some Economic Considerations Affecting the Design of the Power Plant for Water Works Pumping Stations. A study based on a paper by Nicholas S. Hill, before the Munic Engrs of N. Y. City. 4000 w. Engng & Con—May 8, 1912. No. 32657.

Pumping Water for City Supply. E. Macdonald. Read before the Illinois State Elec. Assn. Outlines a plan for assuring efficiency at minimum cost. 1800 w. Elec Rev & Elect'n—Nov. 4, 1911. No. 27687.

Centrifugal Pumping Plants for Irrigation and Drainage. H. L. Hutson. Considers plants of moderate capacity used by the irrigation canal companies of Louisiana and Texas for raising water from rivers into their canal system. Discussion. 10000 w. Jour Assn of Engng Socs—May, 1912. No. 33813 C.

Methods and Cost of Constructing a Pumping and Lighting Station at Kilbourn, Wis. R. G. Walter. Plans and description of a plant on the Wisconsin River. 2500 w. Engng & Con—July 24, 1912. No. 34775.

Grand Rapids Municipal Power and Pumping Plants. Samuel A. Freshney. Illustrated detailed description of the work of enlarging pumping and boiler plants and constructing a new building without interrupting operation. 3000 w. Munic Jour—June 20, 1912. No. 33900.

Pumping Station No. 5 of the Düsseldorf Water Works (Das Pumpwerk V des Wasserwerks der Stadt Düsseldorf). A. Lenze. Description of plant, the most noteworthy of series of stations obtaining water from the underground flow of the Rhine. Ills. 6000 w. Zeitschr d Ver deutscher Ing — May 4, 1912. No. 33570 D.

The Rebuilt French Pumping Stations. C. A. Tupper. Brief illustrated description of stations at Lyons, France. 900 w. Eng News—May 9, 1912. No. 32684.

The New Pumping Station at Nimes (La nouvelle usine élévatoire des eaux de Nimes). M. Déthiollaz. Illustrated description of plant, pumps and line. Plate. 7500 w. Génie Civil—June 22, 1912. No. 34585 D.

See also Pumping Stations, Sewage Disposal, under *Municipal;* Filtration, under *Water Supply*, and Pumping Stations, under MECHANICAL ENGINEERING, *Hydraulic Machinery*.

Purification

The Value of Pure Water. Charles B. Burdick. From a paper before the Indiana San. & Water Supply Assn. Review of what has recently been accomplished in furnishing pure water to cities and the cost. 2000 w. Munic Engng—May, 1912. No. 33194 C.

The Purification of Water Supplies. Reviews the Seventh Research Report by Dr. A. C. Houston, Director of Water Examination to the Metropolitan Water Board, dealing with investigations of the effect of storage of river water, and other subjects of related interest. 2200 w. Engr, Lond—May 3, 1912. No. 32888 A.

Pure Water and Its Relation to Health. J. W. Ellms. Explains what modern science defines as potable water, considers water-borne diseases, methods of purification, filtration, etc. Ills. 4000 w. Jour Assn of Engng Socs—Jan., 1912. No. 30817 C.

Water Purification. Four short papers by different authors, discussed together. 5500 w. Jour Cleveland Engng Soc—March, 1912. No. 31572 D.

Water Purification Viewed from the Hygienic Standpoint. Allen Hazen. Read before the Int. Cong. of Hygiene and Demography. Reviews recent progress in this work. 2500 w. Eng Rec—Oct. 5, 1912. No. 36547.

Water Purification from Standpoints Other Than Hygienic. George W. Fuller. Read before the Int. Cong. of Hygiene and Demography. Outlines recent developments in America in physical and chemical water purification. 4000 w. Eng Rec—Oct. 5, 1912. No. 36548.

The Purification of Water from Standpoints Other Than the Hygienic Aspect. George W. Fuller. Read before the Int. Cong. of Hygiene and Demography. Outlines some of the recent developments in America concerning the physical and chemical features of water purification. 4000 w. Can Engr—Sept. 26, 1912. No. 36381.

Drinking Water in Industrial Plants. John Sebroff. Discusses the industrial loss due to water-borne diseases, and the importance of furnishing a pure supply for the use of workmen. 2500 w. Ind Engng—July, 1912. Serial. 1st part. No. 34770 C.

French Tests of Water Purification Methods. Report of tests conducted by a special commission of Marseilles, comparing results. 3000 w. Munic Jour—July 18, 1912. Serial. 1st part. No. 34663.

Modern Treatment of Residual Waters (Traitement moderne des eaux residuaires). Lucien Cavel. Touching on several methods of purification with special attention to intensive biological treatment. Ills. 4800 w. Tech Mod—July 15, 1912. No. 34582 D.

The Art of Water Purification. C. Herschel Koyl. Considers the present state of the art of purification as applied to municipal waters. 3500 w. Jour Assn of Engng Socs—Aug., 1912. No. 35348 C.

Tests of Water Sterilizing and Purifying Methods at Marseilles, France. Reports an extensive series of tests made to determine the relative effectiveness of a number of methods of water purification. 1300 w. Eng News—Nov. 2, 1911. No. 27651.

New Methods for the Purification of City Water Supplies (Neue Methoden der Trinkwasserreinigung zur Wasserversorgung der Städte). Alexander Swetz. A review of some of the recent methods, as discussed at the International Hygiene Congress in Dresden. Ills. Serial. 1st part. 4200 w. Zeit d Oest Ing u Arch Ver—May 17, 1912. No. 33564 D.

Purification of Bath Water. Frank C. Perkins. Drawing and description of an English equipment for the sanitary purification of the water for swimming baths. 1500 w. Munic Engng—Sept., 1912. No. 36321 C.

The Bacterial Purification of Water and Sewage. Earle B. Phelps. Considers methods utilized in water and sewage purification. 3000 w. Sci Am—July 13, 1912. No. 34362.

Water Purification by Ozone and Ultra-Violet Rays (Trinkwasserreinigung durch Ozon und ultraviolette Strahlung). Brief review of discussion on this subject at the German Soc. for Public Health on Nov. 14, 1911. 1800 w. Elektrotech Rundschau —Nov. 23, 1911. No. 28891 D.

The Ultra-Violet Rays. An account of the discovery and applications of these rays, the development of the mercury vapor lamp, and apparatus for purification of water, and for use in therapeutics. Ills. 3500 w. Can Engr—Jan. 11, 1912. No. 29581.

Studies of Special Methods of Water Purification. An account of investigation, at the Lawrence Experiment Station, described by H. W. Clark and Stephen DeM. Gage. 2500 w. Eng Rec—Dec. 30, 1911. No. 29227.

Some Water Purification and Sewage Disposal Systems. Frederic Bonnet, Jr. Describes interesting phases of works visited during a trip made to study working conditions of a number of systems in the United States. 4000 w. Jour Worcester Poly Inst—Jan., 1912. No. 30033 C.

Sterilizing by Anhydrous Chlorine. Abstract of paper by C. R. Darnall, read before the Am. Pub. Health Assn. Reports an investigation of the practicability of using chlorine in a gaseous form and the method employed. 2500 w. Munic Jour & Engr—Feb. 15, 1912. No. 30453.

Results of the Application of the Hypochlorite Process to Kansas City's Water Supply. Information taken from the last annual report of W. M. Cross. 700 w. Engng & Con—Jan. 10, 1912. No. 29523.

Operation of the Kansas City Water Purification Plant. Reports results of treating Missouri River water. Ills. 1800 w. Eng Rec—Feb. 17, 1912. No. 30471.

The New Plant for the Purification of the Water Supply of Kansas City, Kansas. Illustrated description of works designed with particular attention to the clarification of the water by sedimentation and coagulation before filtration. 4500 w. Eng Rec—Jan. 27, 1912. No. 30064.

Reinforced Concrete for Hypochlorite Solution Tanks. Dr. Walter M. Cross. From a paper read before the Nat. Assn. of Cement Users. Describes the plant at Kansas City, Mo. 1200 w. Can Engr—April 18, 1912. No. 32228.

Experimental and Permanent Plants for Applying Bleach at Kansas City, Mo. Burton Lowther. Illustrates the temporary experimental plant and the new hypochlorite plant, stating results. 2200 w. Eng Rec—May 18, 1912. No. 32930.

The Design and Cost of the Permanent Hypochlorite Disinfecting Plant at International Falls, Minn. J. A. Childs. Illustrated description of the plant as constructed. 1000 w. Engng & Con—May 15, 1912. No. 32910.

Disinfecting Lake Water with Calcium Hypochlorite. From a paper by Dr. Arthur Lederer and Frank Bachmann, read before the Ill. Water Supply Assn. Reports results on the shores of the Great Lakes. 3000 w. Eng Rec—March 30, 1912. No. 31664.

Evanston's Experience with Hypochlorite of Lime and Typhoid Fever. W. Lee Lewis. Gives a summary of results of sterilizing Lake Michigan water. 2000 w. Eng Rec—March 16, 1912. No. 31220.

The New Municipal Water Purification Plant at Niagara Falls, New York. Illustrated description of a plant of the rapid mechanical type with provision for sterilization with hypochlorite of lime if found necessary. 3000 w. Eng Rec—June 1, 1912. No. 33292.

The Plant for Sterilizing the Croton Water Supply of New York City. An account of the chlorinating plant under construction at Dunwoodie, explaining how the chemical solution will be prepared and introduced into the aqueducts carrying a maximum flow of 380,000,000 gals. daily. 2000 w. Eng Rec—June 1, 1912. No. 33290.

A Canadian Sterilization Plant for a Municipal Water Supply. Notes on methods and results of the hypochlorite treatment at Strathcona, Alberta. 2500 w. Eng Rec—Dec. 9, 1911. No. 28707.

Changes and Operating Results at the Coagulation and Sedimentation Plant of the Water-Works of St. Louis, Mo. Edward E. Wall. Illustrates and describes the process of clarifying and purifying the water supply, explaining the benefits. 4500 w. Eng News—Jan. 11, 1912. No. 29535.

Water Purification at Minneapolis. J. Arthur Jansen. The process combines sedimentation, mechanical filtration with lime and sulphate of alumina as reagents, and hypochlorite of lime as a disinfectant. 5000 w. Eng News—June 27, 1912. No. 34112.

The Use of Copper-Sulphate in Purifying Water Supplies. George Embrey. Read before the Inst. of Water Engrs. Also discussion. 2200 w. Surveyor—July 5, 1912. No. 34466 A.

The Use of Copper-Sulphate in Purifying Water Supplies. George Embrey. Read before the Inst. of Water Engrs. of Gt. Britain. Reports experience and method of application. 1000 w. Can Engr—Aug. 1, 1912. No. 35003.

The Municipal Water Softening and Purification Plant at Georgetown, Kentucky. John K. Hoskins. Illustrated description of the design and operation of works for treating daily 750,000 gallons of polluted spring water. 2500 w. Eng Rec—Dec. 16. 1911. No. 28991.

The New Water Purification Works at St. Petersburg. Illustrated description of works which depend upon ozone as the purifying agent. 1000 w. Engr, Lond—Dec. 1, 1911. No. 28765 A.

A Short Account of Some Purification Experiments With a Surface Water in Queensland, Australia. Hardolph Wasteneys. An account of experiments made to determine the best practical method of purifying a reservoir. Discussion. 5500 w. Jour N Eng W-Wks Assn—Dec., 1911. No. 29934 F.

New Water Purification Works at Ottumwa. Illustrated description of the replacing of modern tanks by concrete filters. 2000 w. Eng Rec—May 4, 1912. No. 32586.

Preliminary Treatment of Water for Slow Sand Filtration at Pittsburgh, Penn. George A. Johnson. Explains conditions and the methods of treatment adopted. Ills. 1500 w. Eng News—Oct. 3, 1912. No. 36572.

The Municipal Water Purification Plant of Grand Rapids, Michigan. J. W. Armstrong. Abstract of paper read before the Am. Soc. of Munic. Imp. Illustrated general description of the plant, with information related. 4500 w. Engng & Con—Nov. 8, 1911. No. 27785.

Purification of Salt Water. Robert Spurr Weston. Explains conditions of the fish industry and the need of purifying the water, describing the filtration and results. 1500 w. Jour N Eng W-Wks Assn—Sept., 1911. No. 28219 F.

The Purification of the Waste Water from Paper Mills (L'épuration des eaux residuaires de papeteries). Dr. Camus. Discussion of a previous article by Paul Razous in 1910. 2400 w. Rev d'Econ Indust—Nov., 1911. No. 28869 D.

The "Tiltometer" Chemical Injector. Illustrated description of an apparatus designed primarily for the treatment of large quantities of water, sewage, or trade wastes. 2000 w. Engr, Lond—March 29, 1912. No. 31897 A.

Operating Results of Water Purification Plant at Columbus, Ohio. Information from the 1911 report. 2000 w. Eng Rec—Aug. 31, 1912. No. 35655.

See also Sewage Disposal, under *Municipal;* Sterilization, under *Water Supply,* and Feed Water, under MECHANICAL ENGINEERING, *Steam Engineering.*

Reservoirs

The Economy of Circular Reinforced Concrete Reservoir Construction. Alexander Potter. Ills. 1500 w. Jour N-Eng W-Wks Assn—June, 1912. No. 34030 F.

The Advantages and Limitations of Circular Reinforced Concrete Reservoirs—Enlargement of Such a Reservoir at Suffern, New York. 1500 w. Eng & Con—April 10, 1912. No. 31912.

Two 4000000-Gallon Circular Reinforced Concrete Reservoirs at Brockton, Mass. Illustrates and describes methods of construction to insure impermeability. 1600 w. Eng Rec—Feb. 10, 1912. No. 30345.

An Equalizer Reservoir on a Gravity Flow Line. A 300,000 gal. reinforced-concrete reservoir, and 2½ miles of gravity pipe line recently completed at Austin, Minn., are illustrated and described.

1000 w. Eng Rec—March 30, 1912. No. 31662.

A Combined Fire-Service Reservoir and Swimming Pool in California. Illustrates and describes a 550,000-gallon concrete reservoir with a special watertight joint between the side walls and the floor. 2000 w. Eng Rec—April 6, 1912. No. 31818.

A 1,300,000-Gallon Concrete Reservoir. E. W. Robinson. Discusses the design, construction and cost of a new structure in Webb City, Missouri. 2200 w. Eng Rec—May 11, 1912. No. 32812.

Leakage Through the Expansion Joints of the Twin Peaks Reservoir, San Francisco, Cal. Illustrates and describes the construction of the reservoir and gives the opinion of the commission concerning the cause of the leakage, with recommendations for repair. 3000 w. Eng News —Aug. 22, 1912. No. 35402.

Methods Employed in Constructing the Beacon Hill Reservoir, Seattle, Wash., with Data on Labor Required. E. D. Alexander. Plan and illustrated description of methods of construction. 1500 w. Engng & Con—Aug. 7, 1912. No. 35074.

The Design and Cost of the Two New Reservoirs of the Brockton, Mass., Water System. Abstract of description by Charles R. Felton, in the latest report of the Water Commissioners. 1800 w. Engng & Con—Sept. 4, 1912. No. 35795.

Progress on the Ashokan Reservoir and Adjacent Works. Illustrations and description of the condition of work on the reservoir and of the Catskill water supply for New York City. 2500 w. Eng Rec—Oct. 19, 1912. No. 36901.

Relining a Brick-Lined Reservoir. Thomas Fleming, Jr. Illustrates and describes the relining with concrete. 1500 w. Cornell Civ Engr—Jan., 1912. No. 30038 C.

Water Supply for Dallas, Texas. Eugene Couch. Illustrated description of a new reservoir on White Rock Creek, having a storage of seven billion gallons. 2000 w. Eng News—Jan. 18, 1912. No. 29837.

Skating Rinks Above Water-Works Reservoirs, Reading, Penn. Mandes Golder. Brief illustrated description of use made of a covered reservoir. 600 w. Eng News —Jan. 25, 1912. No. 30090.

See also Fire Systems, under *Water Supply*, and Barge Canal, under *Waterways and Harbors.*

Residence Supply

Modern Systems of Water Supply. Illustrates and describes machines and appliances used in furnishing conveniences in country residences, their construction, operation, etc. 2000 w. Met Work—May 31, 1912. Serial. 1st part. No. 33386.

San Francisco

Proposed Hetch Hetchy Water Supply, San Francisco. Information from a recent report giving a general idea of the project. 3000 w. Eng Rec—Sept. 14, 1912. No. 35936.

Sanitation

The Economic Value of a Public Water Supply Resulting directly from Improved Sanitation Alone. W. H. Booker. From *Bul. of N. C. State Bd. of Health.* Aims to show the difference in health and mortality among users of public and private supplies. 1500 w. Engng & Con—Nov. 8, 1911. No. 27786.

Sanitary Plumbing. J. Wright Clarke. First of a series of articles dealing with water from the reservoir to the sewer. The present number considers the collecting and storing of rain water for domestic use. 3500 w. Plumb & Dec—Nov. 1, 1911. Serial. 1st part. No. 28108 A.

Protection of New York's Water Supply from Pollution During Construction Work. Andrew J. Provost, Jr. Describes the sanitary precautions enforced in the construction camps and the results. Ills. 4000 w. Jour N Eng W-Works Assn—Sept., 1911. No. 28215 F.

Sanitary Survey of the Ottawa River. From a report by James O. Meadows to the Board of Health of the Province of Quebec. Reports a study of the river made to determine its use as a source of water supply. 2500 w. Can Engr—June 13, 1912. No. 33729.

Seepage

See Irrigation, under *Water Supply.*

Semi-Arid

Some Water Supply Problems Encountered in the Semi-Arid Regions of the United States. Clarence Goldsmith. An account of difficulties, sources of supply, and related matters. Discussion. 5500 w. Jour N-Eng W-Wks Assn—June, 1912. No. 34081 F.

Settling Basins

New Settling Basin of the Water Works at Kansas City. Wynkoop Kiersted. Illustrated detailed description of this new basin and its operation. 4000 w. Eng News—Feb. 29, 1912. No. 30934.

The Value of a Continuous Settling Basin. Alexander Potter. Abstract of a paper before the Am. W-Wks. Assn. Describes a new settling basin at Muskogee, Okla. Ills. 1500 w. Eng Rec—June 15, 1912. No. 33722.

Singapore

Singapore Waterworks Extensions. Illustrates and describes extensions comprising extensive reservoir and filters, the construction. 3000 w. Surveyor—May 3, 1912. No. 32876 A.

Siphons

The Syphon. Joseph Parker. Read beforo the Scottish Branch of the Nat. Assn. of Col. Mgrs. Deals with the natural philosophy of the syphon and applications of practical value. 2500 w. Ir & Coal Trds Rev—Feb. 2, 1912. No. 30413 A.

An Inverted Siphon on the Orland Irrigation Project. Illustrates and describes details of this reinforced-concrete siphon in California. 1200 w. Eng Rec—Dec. 30, 1911. No. 29231.

Inverted Siphons on the Los Angeles Aqueduct. Brief description of the 12.03 miles of syphons at canyon and valley crossings. 1000 w. Eng Rec—June 29, 1912. No. 34120.

Reinforced Concrete Inverted Siphons on a Main Canal. Illustrates and describes structures in Glenn Co., Cal. 1200 w. Eng Rec—July 27, 1912. No. 34806.

Methods and Costs of Reinforced Concrete Siphon Construction on the Los Angeles Aqueduct. D. L. Reaburn. Illustrates and describes the construction of the Whitney, and South Antelope siphons as representative, giving some costs. 2500 w. Engng & Con—July 3, 1912. No. 34243.

The Colorado River Siphon at Yuma, Arizona. Francis L. Sellew. Describes difficulties encountered in constructing an inverted siphon, outlining the project of which the siphon is a feature. Ills. 3000 w. Eng News—Aug. 29, 1912. No. 35641.

Sluices

A New Type of Outlet Sluice (Een nieuw type uitwateringssluizen). W. B. Johs. A modification of the syphon principle. Ills. 3000 w. De Ingenieur—Oct. 7, 1911. No. 28470 D.

Softening.

Water-Softening Plant for 10,000 Gallons per Hour. Describes a plant at York, Eng., having many points of interest from the point of view of the exceptionally hard nature of the water, and the stringent guarantees to be fulfilled. Ills. 2500 w. Engng—May 17, 1912. No. 33278 A.

The Water Softening Plant at Owensboro, Ky. Philip Burgess. Plan and sections showing the arrangement, with description of method of treating deep well water chemically before sedimentation. 3300 w. Eng Rec—June 1, 1912. No. 33291.

South Africa

I. The Water Supply of the Witwatersrand. Donald Calder Leitch. Paper No. 3906. II. Investigations Relating to the Yield of a Catchment-Area in Cape Colony. Edward Cecil Bartlett. No. 3883. Two papers discussed together. Plates. 126 pps. Inst of Civ Engrs—No. 37085 N.

Spillways

A Method of Computing the Size of Spillway for a Dam. H. K. Palmer. Develops a method. 1500 w. Eng News—March 21, 1912. No. 31466.

Sprinkling

A Simple Automatic System for Lawn Sprinkling, Los Angeles, Calif. Burt A. Heinly. Illustrated description of the spray irrigation system used in the parks. 1200 w. Eng News—April 11, 1912. No. 31939.

Stand Pipes

Surge in a Hydraulic Stand Pipe—Experiment and Theory. Irving P. Church. An account of experimental work on the action of water in a stand pipe. 2000 w. Cornell Civ Engr—Dec., 1911. No. 29077 C.

Removing the Old Standpipe in the Chicago Avenue Pumping Station, Chicago. F. Carl Martini. Illustrates and describes the method of performing the work. 1000 w. Eng News—Jan. 18, 1912. No. 29836.

Standpipe Failure at Sheboygan, Wis. A statement of facts in regard to this failure, suggesting weak points in design which should be eliminated. Ills. 2000 w. Eng News—Feb. 1, 1912. No. 30235.

Sterilization

Violet Ray Sterilization of Drinking Water in Chicago. Illustrated description of the plant. 1000 w. Eng Rec—July 27, 1912. No. 34811.

The Ultra-Violet Ray Apparatus for Sterilizing Water (L' Appareil de Stérilisation de l'Eau par les Rayons Ultra-Violets). Description of the small plants placed at the drinking fountains in the railway stations of the Compagnie du Nord, Paris. Ills. 1100 w. Rev Gen des Chemins de Fer—Aug., 1912. No. 35576 G.

An Electrolytic Sterilizing Plant. Diagram and brief description of an electrolytic sodium hypochlorite sterilizing apparatus. 800 w. Elec Rev, Lond—April 26, 1912. No. 32828 A.

The Treatment of Water with Chlorine. Joseph Race. Read before the Soc. of Chem. Ind. Reviews the use of chlorine as a disinfectant, giving an account of the Toronto filtration plant and chlorine treatment. 4500 w. Can Engr—Sept. 5, 1912. No. 35820.

The Production of Chlorine for Water and Sewage Sterilization. Joseph Race. Review of the different methods of production. 2500 w. Can Engr—Aug. 1, 1912. No. 35004.

Some Notes on the Hypochlorite Treatment of Water. From an article by W. H. Dittoe in the Bul. of the Ohio State Bd. of Health. Considers the chemistry of the process, its application and effects. 1200 w. Engng-Con—July 31, 1912. No. 35030.

Hypochlorite Sterilization of Water Supplies. C. A. Jennings. Abstract of a paper before the Int. Cong. of Ap. Chem. Information concerning its success in stopping typhoid fever epidemics, giving reports of a number of plants. 2500 w. Eng Rec—Sept. 14, 1912. No. 35939.

Stream Flow

See Slide-Rules, under *Measurement.*

Submerged Mains

Construction Methods Employed in Laying Submerged Water Mains Across Three Rivers in Georgia and Mississippi. From a paper by M. L. Worrell, before the Am. W-Wks. Assn. Illustrated description of methods adopted. 2500 w. Engng & Con—June 19, 1912. No. 33823.

A Submerged Flexible-Joint Main. Frank Reed. Describes a somewhat hazardous operation in New Zealand in carrying a flexible-joint main across the rapid and treacherous Taramakan River. Ills. 2000 w. Inst of Min & Met, Bul 88—Jan. 11, 1912. No. 29976 N.

Suburban

Water Supply for Country and Suburban Residence Work. Harold L. Alt. Considers methods of securing a proper supply. Ills. 2500 w. Dom Engng—Aug. 17, 1912. No. 35259.

Supplies

Leicester Water Supply from the Derwent Valley. Maps and description on this portion of the Derwent Valley scheme. 2500 w. Engr, Lond—Sept. 6, 1912. No. 36004 A.

Syracuse, N. Y.

A Brief Description of the Water Supply of the City of Syracuse. Marshall B. Palmer. Ills. 1800 w. Cornell Civ Engr—Jan., 1912. No. 30041 C.

Tanks

How the House Tank Should Be Constructed and Installed. Harold L. Alt. Directions for its construction and care. Ills. 2500 w. Dom Engng—Sept. 28, 1912. No. 36423.

An Unusual Type of Elevated Concrete Tank. Describes the Construction of a 100,000-gal. reinforced concrete tank having a double dome bottom and resting on columns 75 feet high. 2000 w. Eng Rec—June 1, 1912. No. 33294.

The Design and Construction of a 100,000-Gallon Reinforced Concrete Water Tower and Tank. Illustrated detailed description of a structure in Chicago. 3000 w. Engng & Con—May 22, 1912. No. 33043.

The General Design and Specifications for the Elevated Structural Steel Water Tower and Tank of 100,000 gals. Capacity, Hamilton, Ill. Outline and detail drawings, with specifications. 2000 w. Engng & Con—June 19, 1912. No. 33824.

Test Methods

A New Water-Testing Device. Illustrated description of an apparatus known as the Dionic water-tester, used as an indicator of any variations in the organic contents. 1800 w. Can Engr—April 18, 1912. No. 32230.

Toronto

Report on Toronto Water. Abstract of a report of consulting engineers appointed to examine the supply, and advise concerning its improvement. Ills. 8000 w. Can Engr—May 30, 1912. No. 33333.

Tropics

Some Notes on Tropical Water Supply and a Study of Filtration at Panama. Herman K. Higgins. Reviews the history of the Panama water supply. Ills. Discussion. 6000 w. Jour N Eng W-Wks Assn—Dec., 1911. No. 29936 F.

Typhoid

Typhoid Outbreak, Cedar Falls, Iowa. A. L. Grover and R. B. Dole. An account of an outbreak due to contamination of the water supply. 1800 w. Eng News—March 21, 1912. No. 31467.

A Study of the Typhoid Fever Epidemic at Rockford, Illinois, Caused by a Contaminated Water Supply. 6000 w. Engng & Con—Aug. 28, 1912. No. 35615.

Some Characteristics of Typhoid Fever Outbreaks Which Serve to Indicate the Causes and Modes of Infection. H. N. Parker. Read before the Illinois Water Supply Assn. 2000 w. Engng & Con—Aug. 28, 1912. No. 35616.

See also Sanitation, and Sterilization, under *Water Supply.*

Valves

See same heading under MECHANICAL ENGINEERING, *Hydraulic Machinery.*

Waste

Some Notes on the Use, Misuse, and Waste of Public Water Supplies: Can Misuse and Waste Be Remedied? William Whitehouse. Read before the Inst. of Munic. Engrs. Also general discussion. 7000 w. Surveyor—June 28, 1912. No. 34320 A.

Water Measurement and Prevention of Water Waste in New York City. An official statement from Henry S. Thompson, Commissioner, New York City. Map and report of investigations and pitometer surveys in waterfront districts. 1500 w. Eng News—March 14, 1912. No. 31183.

Water Waste Surveys at Chicago. Map and account of conditions, describing a survey to detect waste and leakage and its results. 4000 w. Eng News—May 9, 1912. No. 32685.

Sources of Water Waste in Chicago—Results of Waste-Prevention Efforts. Information abstracted from the report of City Engineer Ericson. 3000 w. Engng & Con—Dec. 27, 1911. No. 29256.

The Prevention of Water Waste in Washington, D. C. Information from the last report of the District Commissioners, reviewing the present situation. 2000 w. Eng Rec—Dec. 30, 1911. No. 29232.

Results of the Water Waste Survey in Milwaukee, Wis.—Conclusions and Recommendations—Increased Meterage Desirable. From Bul. No. 11, issued by the Bureau of Economy and Efficiency, summarizing recent investigations. 2500 w. Engng & Con—April 24, 1912. No. 32326.

Water Hammer

Water Hammer Experiments. M. R. Lott. Report of experiments made to determine the effect of the cross-sectional area of the connection between standpipe and flow line on water hammer. 2200 w. Eng Rec—Oct. 26, 1912. No. 37008.

Water Laws

State and National Water Laws, with Detailed Statement of the Oregon System of Water Titles. John H. Lewis. A statement of the principles underlying the Oregon system of water titles, with results thus far accomplished. 14000 w. Pro Am Soc of Civ Engrs—Sept., 1912. No. 37092 F.

Water Mains

Steel Mains v. Cast Iron for Gas and Water Distribution. Fred C. Uren. Considers the uses and comparattive advanages, favoring steel pipes. Ills. 10800 w. Trans Inst of Civ Engrs of Ireland—Vol. 37. No. 27999 N.

Water Power

Hydraulic Power. Joseph Horner. This first article of a serial considers the general utilities of hydraulic mechanism. Ills. 3500 w. Cassier's Mag—May, 1912. Serial. 1st part. No. 33028 B.

The Influence of Ice on Water Power Development. H. T. Barnes. Abstract of a paper before the Can. Elec. Assn. Describes the three distinct forms of ice and the effects of each, and gives a few rules for avoiding ice troubles. 2500 w. Can Engr—June 27, 1912. No. 34184.

Water Power Development under Government Control. O. C. Merrill. From a paper read before the San Francisco Assn. of the members of the Am. Soc. of Civ. Engrs. Outlines the policies followed by Italy, Switzerland, Ontario, New York State, and the U. S. Dept. of Agriculture. 3000 w. Eng Rec—April 27, 1912. No. 32395.

Water-Power Development in the United States. Abstract of a recent report to President Taft with editorial note. 4000 w. Elec Wld—May 11, 1912. No. 32802.

Water-Power Development in the South. J. A. Switzer. Illustrated description of hydro-electric work in the southern Appalachian region. 3000 w. Cassier's Mag—June, 1912. Serial. 1st part. No. 33848 B.

The Power Situation in the State of New York. A. H. Perkins. Considers the water power demands and supplies of the State, and outlines the plans of the Conservation Commission for promoting development. 4000 w. Engineering Magazine—Aug., 1912. No. 34758 B.

Available Swedish Water Power and Its Uses (Die Wasserkräfte Schwedens und deren Ausnutzung). A. Oelwein. Discusses subject with aid of accompanying map. 2700 w. Zeit d Oest Ing u Arch Ver—Dec. 1, 1911. No. 29749 D.

A Brief Description of the Gloucester Water Works. John W. Moran. 1500 w. Jour N Eng W-Wks Assn—Sept., 1911. No. 28218 F.

The Extensions to the Attleboro Water-Works System. Reports of a municipal ground supply by collecting surface water and allowing it to percolate through material gravel beds into wells. Ills. 1800 w. Eng Rec—Nov. 25, 1911. No. 28289.

Power Development at Sandy Falls on the Mattagami River. Illustrated detailed description of a plant supplying power to the Porcupine gold fields. 1000 w. Eng Rec—March 30, 1912. No. 31656.

Utilizing Water Power at the Cincinnati Filtration Plant. J. S. Gettrust. Illustrates and describes the general arrangements. 1500 w. Eng Rec—May 4, 1912. No. 32583.

Water Power Development at Keokuk, Iowa. Illustrates and describes an installation for utilizing the power from the Des Moines Rapids of the Mississippi River. 2500 w. Cement & Engng News—May, 1912. No. 32856.

I. The Loch Leven Water-Power Works. Alfred Henry Roberts. No. 3932. II. The Hydro-Electric Plant in the British Aluminium Company's Factory at Kinlochleven. Frederic Bolton Sonnenschein. No. 3925. With an abstract of the discussion on the papers. Descriptions with illustrations. 116 pages. Inst of Civ Engrs—May, 1912. No. 33170 N.

The Design and Methods Employed in Constructing the Cooke Water-Power Plant on the Au Sable River in Michigan—Concrete Mixtures Used—Tests of Turbines—Camp Sanitation. 4500 w. Engng & Con—June 5, 1912. No. 33482.

See also same heading under ELECTRICAL ENGINEERING, *Generating Stations;* and Power Resources, under MECHANICAL ENGINEERING, *Power and Transmission.*

Water Resources

The Water Resources of Minnesota; Storage Developments Planned and Under Way. George C. Ralph. Read before the Minn. Survs. & Engrs.' Soc. Describes work to prevent floods and conserve the river waters. Ills. 1500 w. Engng & Con—March 13, 1912. No. 31179.

Water Rights

The Appraisal of Water Rights. Discusses the determination of the value of the water rights as given in a report by Halbert P. Gillette to the Everett (Wash.) Ry., Light & Water Co. 6000 w. Engng & Con—April 17, 1912. No. 32143.

Notes and Suggestions on the New Water Rights Laws (Betrachtungen und Vorschläge zur Wasserrechtsgesetznovelle). J. Tobell. Discussion on some of the Articles of the recently enacted Prussian water legislation. 3600 w. Elektrotech u Maschinenbau—Mar. 24, 1912. No. 32070 D.

New Plans in Prussian Water Legislation (Zum neuen Entwurf eines Preussichen Wassergesetzes). Herr Bitta. A discussion of the new rulings which affect navigable streams and canals. 4900 w. Stahl u Eisen—Jan. 18, 1912. No. 30507 D.

Water Legislation (Zum Wassergesetz). W. v. Winkler. Replies to previous discussion by J. Tobell. 5200 w. Elektrotechnik u Maschinenbau—Aug. 25, 1912. No. 36141 D.

Water Power Utilities and the New Water Legislation (Die Wasserkraftausnutzung und das neue Wasserrecht). Heinrich Schreiber. Discusses the effects of the proposed water regulation upon the development of power schemes. 6400 w. Elektrotechnik u Maschinenbau—March 3, 1912. No. 31375 D.

The Third Draft of Prussian Water and Mining Laws (Der dritte Entwurf eines preussischen Wassergesetzes und der Bergbau). G. Wulf. Especially concerning the use and regulation of water in connection with mining enterprises. Serial. 1st part. 4500 w. Glückauf—March 2, 1912. No. 31345 D.

Water Service

Report of Committee on Water Service. Report (1) on design and relative economy of track pans; (2) plans and specifications for tank supports; (3) on the use of reinforced concrete for water tanks and supports. 9000 w. Bul Am Ry Engng Assn—Dec., 1911. No. 31284 N.

Water-Works

Reaching the High Places, or Booster Pumps. H. E. Cole. Condensation of paper and discussion before the Cent. States W.-Wks Assn. Discusses the kinds of consumption requiring booster service, and ways of meeting the need. 2500 w. Eng News—Oct. 17, 1912. No. 36896.

Some Economic Considerations Affecting the Choice of Power, Pumps, and Reservoirs for Booster Service-Automatic Control. Extracts from a paper by H. E. Cole before the Central States Water Works Assn. 2500 w. Engng & Con—Oct. 9, 1912. No. 36762.

The New Water-Works for Skegness. Percy Griffith. Read before the Inst. of Water Engrs, London. Describes the scheme carried out at this seaside resort. Ills. 6000 w. Surveyor—Dec. 22, 1911. No. 29460 A.

Some Features and Methods of Water Works Operation in Springfield, Illinois. W. J. Spaulding. Abstract of a paper before the Ill. Water Sup. Assn. Considers meters, free water, extension of mains, and service connections. 2500 w. Engng & Con—April 3, 1912. No. 31791.

An Inexpensive Water Works. Edward P. Bailey. Brief illustrated description of the system at Brawley, in the Imperial Valley, California, with itemized cost. 1200 w. Munic Jour & Engr—April 18, 1912. No. 32166.

Erie Water Works Improvements. Thomas Fleming, Jr. Describes the present plant and the proposed additions. 2500

w. Munic Jour & Engr—April 4, 1912. No. 31796.

Further Notes on the New Lanarkshire Middle-Ward District Waterworks. John McNee. Describes the supply, giving information concerning the raising of the level of Glengavel reservoir, and the mechanical filtration. 3000 w. Inst of Civ Engrs. No. 3948 — May, 1912. No. 33164 N.

Report on the Sanitary Efficiency of the Philadelphia Water Works. From a report of Hollis Godfrey. 3000 w. Eng News—May 23, 1912. No. 33068.

Cheltenham Waterworks. J. S. Pickering. Read before the Inst. of W-Wks. Engrs. Plan and illustrated description. 2200 w. Surveyor—June 7, 1912. No. 33780 A.

The Design and Construction of the Municipal Water-Works System at Mountain Home, Idaho, with Some Costs. Edmund M. Blake. Describes the town and conditions and the system, giving cost. Ills. 3000 w. Engng & Con—May 29, 1912. No. 33307.

A Brief Description of the Gloucester Water Works. John W. Moran. 1500 w. Jour N Eng W-Wks Assn—Sept., 1911. No. 28218 F.

The Gloucester Water-Works, Witcombe Reservoirs. R. Read. Describes the works and briefly reviews their history. 2000 w. Surveyor—June 14, 1912. No. 33931 A.

The Extension to the Attleboro Water-Works System. Reports of a municipal ground supply by collecting surface water and allowing it to percolate through material gravel beds into wells. Ills. 1800 w. Eng Rec—Nov. 25, 1911. No. 28289.

The Storage Yard and Shops of the Detroit Water-Works Commission. Describes method of handling and recording supplies for a large system, and the installation of a meter testing shop for insuring accurate work in the water department. 2000 w. Eng Rec—June 1, 1912. No. 33293.

The Municipal Water-Works at Corning, California. C. F. Braun. Brief illustrated description of a well-designed typical plant. 1500 w. Eng Rec—June 29, 1912. No. 34122.

The Derwent Valley Waterworks. Illustrated detailed description of this great undertaking for supplying water to Leicester, Derby, Sheffield, and Nottingham. 4500 w. Engr, Lond—July 19, 1912. No. 34901 A.

New Waterworks for Stockport. Plan and illustrated description of the works, with review of their history and operation. 3500 w. Engr, Lond—July 12, 1912. No. 34719 A.

The Design and Cost of the Water Works System of Crosswicks, New Jersey. C. M. Hartley. Detailed description of a supply for a village of 400 inhabitants from springs about ¾ of a mile distant. Ills. 1500 w. Engng & Con—Aug. 21, 1912. No. 35389.

The New Water-Works System of Cumberland, Maryland. Water collected behind an 82-foot masonry dam is purified by rapid filtration and delivered by an 8-mile line of 36-in. wood stave pipe. Ills. 2500 w. Eng Rec—Sept. 14, 1912. No. 35935.

Water Works of the Kansas Cities. Illustrates and describes the pumping station and municipal light and town plant of Kansas City, Kan., together with the low- and high-head plants of Kansas City, Mo. 1800 w. Power—Sept. 3, 1912. No. 35712.

Ashton-under-Lyne, Stalybridge, and Dukinfield Waterworks. Illustrated description of the mechanical filtration plant for the treatment of water in a district containing many dye works and engineering establishments. 2500 w. Engr, Lond—Sept. 20, 1912. No. 36501 A.

The Economic Importance of the Auto-Vehicle in the Efficient Operation of a Water Works System. Burt A. Heinly. An account of the auto service in Los Angeles, Cal., City Water Department. Ills. 2500 w. Engng & Con—Oct. 16, 1912. No. 36865.

See also Management, under INDUSTRIAL ECONOMY; and Plumbing Plants, under MECHANICAL ENGINEERING, *Hydraulic Machinery*.

Water-Works Management

The Principles of Efficiency Applied to Water-Works. Harrington Emerson. Abstract of paper read before the Am. W.-Wks. Assn. States and discusses the principles as applied to water-works. 2000 w. Eng Rec—June 15, 1912. No. 33725.

Water-Works Practice

The Drafting Room Practice of the Board of Water Supply, New York City. Explains methods of making, filing, and reproducing contract drawings. 3000 w. Eng Rec—April 6, 1912. No. 31820.

Weirs

Flow of Water Over Narrow Weirs. Abstract from thesis by H. W. Maynard and J. P. Hurley. Report of experimental investigations of the limitations of the Francis' formula. Ills. 2000 w. Cornell Civ Engr—April, 1912. No. 32188 C.

The Movable Diversion Weir at Berembed. Illustrated description of the sluices and wickets and the method of operating them. 2500 w. Eng Rec—May 4, 1912. No. 32584.

Wasteway at Belle Fourche Dam. A. W. Walker. Illustrates and describes a 3000-ft. channel of earth and concrete terminating in a Cippoletti weir. 4000 w. Eng Rec—Oct. 5, 1912. No. 36543.

Water Supply for the West Australian Gold Fields. L. E. Shapcott. Brief illustrated description of the Mundaring weir, which supplies water to the Kalgoorlie goldfields. 500 w. Sci Am Sup—April 27, 1912. No. 32885.

Wells

Wells as Sources of Supplementary Water-Supplies. Myron L. Fuller. Explains the effectiveness of such sources of supply. 1200 w. Eng News—Sept. 12, 1912. No. 35925.

Combined Percussion and Rotary Well-Boring Machine for Argentina. Illustrated description. 900 w. Engng—July 5, 1912. No. 34473 A.

General Costs, Construction Plant and Methods Employed in Sinking a Dug Well 20 Feet in Diameter and 24 Feet Deep. I. E. Jay. Descriptive of work in Kansas. The well was 20 feet in inside diameter, and the walls 18 inches thick. It was sunk in "running sand," "floating mud" and clay in a semi-arid region under unusual conditions. Ills. 3000 w. Engng & Con—Aug. 21, 1912. No. 35388.

The Water Supply of Joliet, Ill. Methods of Overcoming Difficulties Encountered in Sinking New Deep Rock Wells. H. A. Stevens. Read before the Ill. Water Supply Assn. 3000 w. Engng & Con—June 26, 1912. No. 34104.

Wood Pipe

The Design and Specifications of the Sacramento Water Supply Wood Pipe Line of the El Paso & Southwestern Ry. Co., in New Mexico. 3000 w. Engng & Con—July 17, 1912. No. 34608.

Worcester, Mass.

How the Water Emergency at Worcester, Mass., Was Handled in the Summer of 1911, Together with a Brief Description of Worcester's Sources of Water Supply. Frank C. Kimball. Ills. 9000 w. Jour N-Eng W-Wks Assn — June, 1912. No. 34029 F.

WATERWAYS AND HARBORS

Antwerp

Improvement to the Port of Antwerp. Notes from *Les Ann. des Travaux Pub. de Belgique*, discussing the projects now under consideration in this port. Maps. 2000 w. Engr, Lond—May 10, 1912. No. 32992 A.

Barge Canal

A Summary of Eight Years Work on the New York State Barge Canal. Emile Low. 1800 w. Eng News—Sept. 12, 1912. No. 35924.

Water Supply Projects in Connection with the New York State Barge Canal. W. G. Wildes. Illustrated description of the construction of the reservoirs at Hinckley, and at Delta, N. Y. 7000 w. Eng News—Feb. 15, 1912. No. 30433.

The Irondequoit Creek Concrete Trough. H. J. Knoppel. Illustrates and describes a reinforced concrete waterway built on a high fill to carry the N. Y. State Barge Canal near Pittsford. 1500 w. Eng Rec—May 11, 1912. No. 32809.

The Irondequoit Creek Disaster on the New York Barge Canal and Its Bearing on Current Waterway Agitation. Editorial pointing out the object lesson this disaster near Rochester, N. Y., should furnish to those favoring inland waterway construction. 1200 w. Eng News—Sept. 26, 1912. No. 36363.

Break in the New York State Barge Canal at the Irondequoit Creek Crossing. An illustrated account of the accident near Rochester, occurring Sept. 3, 1912, causing damage cost of about $200,000, and discussing possible causes of the accident. 5000 w. Eng News—Sept. 19, 1912. No. 36097.

Break in the New York State Barge Canal. Illustrated account of the destruction of a concrete trough canal section built on an embankment near Rochester. 3000 w. Eng Rec—Sept. 28, 1912. No. 36405.

Repairing Break on New York Barge Canal. Describes the method of organization and procedure for the construction in 28 days of a temporary timber flume. Ills. 1500 w. Eng Rec—Oct. 12, 1912. No. 36783.

Repairing the Break in the Irondequoit Embankment on the Erie Canal. Illustrates and describes the work of closing the break to permit the passage of boats on the Erie Canal. 1000 w. Eng News—Oct. 3, 1912. No. 36575.

See also drilling, under *Construction*, and Cofferdams, under *Waterways and Harbors.*

Boston, Mass.

Harbor and Terminal Improvements at Boston, Mass. Map and description of general conditions and of the development work in progress; the new rail and water terminal of the B. & A. R. R., and proposed future improvements. Ills. 4500 w. Eng News—Nov. 2, 1911. No. 27653.

Breakwaters

The More Recent Types of Breakwater Construction and the Unit Cost of Several of Importance in the United States. Abstract of a paper by J. F. Hasskarl, before the Int. Cong. of Nav., outlining practice on the seacoast and on the Great Lakes. 2500 w. Engng & Con—June 26, 1912. No. 34101.

Some Notes on Breakwater Construction of Timber Cribs and Concrete Superstructure. J. A. B. Tomkins. Describes briefly several recent breakwater works on Lake Michigan. Ills. 2500 w. Engng & Con—Oct. 2, 1912. No. 36469.

The Building of Breakwaters at Lake Erie Ports. Henry F. Alexander. These breakwaters are what is known as rubble mound breakwaters. Considers methods of handling stone, determining weight, and other features of the work. 1800 w. Jour Am Soc of Engng Cont—Nov., 1911. No. 29981 N.

Method and Cost of Constructing Concrete Superstructure for Breakwater at Harbor Beach, Mich. Illustrated description of methods used in tearing up the old superstructure and constructing the new, with statement of cost. 4500 w. Engng & Con—Sept. 25, 1912. No. 36349.

Breakwater at Svaneke, Island of Bornholm. Illustrated description of work undertaken to protect dangerous fishery harbors in the Baltic Sea. 1200 w. Engng —March 15, 1912. No. 31526 A.

New Breakwater for Victoria, B. C. Illustrated description of improvements to be made in this harbor in anticipation of great increase of trade at the opening of the Panama Canal. 1000 w. Can Engr—Aug. 29, 1912. No. 35722.

Method of Constructing a Breakwater at Naples, Italy, Using Concrete Hollow Blocks Made of Puzzuolana-Portland Cement. Illustrated description of the construction as given by I. Inglese in a report to the Int. Cong. of Nav. 3500 w. Engng & Con—June 12, 1912. No. 33699.

The Construction of Breakwaters in Modern Maritime Ports (La struttura dei moli nei porti marittimi moderni). L. Figari. Mathematical and diagramatical methods for determining the size and thickness of breakwaters, jetties and piers. Ills. 8000 w. Ann della Soc d Ing e d Arch Ital—Apr. 16, 1912. No. 32789 E.

See also Jetties, under *Waterways and Harbors.*

Bulkheads

A Large Timber Bulkhead Under 168-Ft. Head. Arthur W. Tidd. Drawings and description of a temporary bulkhead used in connection with work in the Catskill aqueduct. 1200 w. Eng News—July 25, 1912. No. 34792.

Buoys

The Buoys of New York Harbor. H. F. Sherwood. Describes details of the harbor and illustrates and describes types of buoys in use. 3000 w. Rudder—Oct., 1912. No. 36529 C.

Canals

Dimensions for Canals of Heavy Traffic; A Summary of Practice in Leading Countries. Abstract of a summary made by Alfred Noble of the seven reports, outlining practice in as many countries, presented at the recent Int. Cong. of Nav. 10500 w. Engng & Con—July 24, 1912. No. 34772.

The Proposed Atlantic Intra-Coastal Waterways. Edward Parrish. Outlines the project, presenting its advantages and giving estimated costs. Short discussion. 5000 w. Jour N Eng W-Wks Assn —Sept., 1911. No. 28214 F.

The New Ship Canal and Locks at Sault Sainte Marie. James Cooke Mills. Illustrates and describes recent extensions of this important canal. 3500 w. Cassier's Mag—Dec., 1911. No. 28709 B.

A Study of the "Clichy-Port-de-Mer" Project (Etude du Projet "Clichy-Port-de-Mer"). Ch. Lavaud. Description of the proposed canal between Rouen and Clichy, and reports on similar canals elsewhere. Maps and tables. 52 pages. Mem Soc Ing Civ de France—Nov., 1911. No. 30592 D.

Present Construction of Navigable Canals in France (Le attuali costruzioni delle vie navigabili in Francia). P. De Sanctis. Review of the paper submitted by M. J. Bourgougnon to the Twelfth International Navigation Congress. Ills. 5400 w. Ann della Soc d Ing e d Arch Ital—May 16, 1912. No. 34011 E.

Feeding System of the Orleans Canal by the Elevation of Water Through Successive Water Courses (Alimenation du Canal d'Orleans par Élévation de l'Eau de Bief en Bief). M. Rousseau. Describes method of supplying water to the canal across the watershed between the Loire and Seine. Plates. 5000 w. Ann d Ponts et Chaussées—Jan.-Feb., 1912. No. 32076 E + F.

The Navy's Interest in the Cape Cod Canal. J. W. Miller. Explains the general features of this canal and their relation to coastwise commerce; discusses its effect upon naval service; its military importance; and illustrates its bridges and other features. Map. 2000 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33826 H.

Blowout of a Canal Retaining Wall at Ansonia, Conn. An illustrated description of the failure on May 28, 1912, and the circumstances attending it. 1500 w. Eng News—June 20, 1912. No. 33863.

The Break in the Power Canal Wall at Ansonia. J. R. Coe. Illustrated description of a blow-out which occurred on May 28, under a new canal-bank retaining wall at Ansonia, Conn. 1200 w. Eng Rec—June 15, 1912. No. 33720.

Enlargement of the Kaiser Wilhelm Canal. Editorial on the enlargement of this great canal which joins the Baltic to the North Sea. 1600 w. Engng—June 21, 1912. No. 34221 A.

The Lock Gates of the Industrial and Commercial Harbor at Bremen-Oslebshausen (Die Schleusentore des Industrie- und Handelshafens zu Bremen-Oslebshausen). Ernst Overbech. Detailed description of the construction and operation of these gates. Ills. and plates. 8000 w. Zeitschr des Ver deutscher Ing—Jan. 6, 1912. No. 30561 D.

Canal Systems on the Lower Bega (Die Kanalisierung der unteren Bega). Herr Pollak. Description of these Austrian Canals. 1800 w. Zeit d Oest Ing u Arch Ver—Jan. 26, 1912. No. 30538 D.

See also Slide Rules, under *Measurement;* Drainage Canals, under *Municipal;* Evaporation, and Irrigation, under *Water Supply;* Barge Canal, and Detroit River, under *Waterways and Harbors*, and Propellers, under MARINE AND NAVAL ENGINEERING.

Causeway

Construction of the Galveston Causeway. Illustrates and describes details of the building of the steam and electric railway and highway connection from the island to the mainland. 2500 w. Ry Age Gaz—Aug. 2, 1912. No. 35050.

Channels

Commercial Results from the Improvement of a Tidal Creek for Navigation. R. R. Raymond. Map and description of improvement of the Murderkill River, Delaware, as a type of the problems presented and results obtained. 2000 w. Eng News—May 30, 1912. No. 33324.

Livingston Channel; Detroit River. E. T. Lednum. A general description of the submarine work to give greater depth and width for the modern large vessels. Ills. 4000 w. Eng News—May 30, 1912. No. 33328.

Methods of Channel Protection with a Description and Costs of a Special Method Employed at Devil's Island, Illinois. F. Y. Parker. Ills. 1500 w. Engng & Con—Feb. 14, 1912. No. 30427.

Chicago

Chicago's Waterways in Their Relation to Transportation. George A. Zinn. General discussion of the relation between waterways and transportation, and the terminal facilities needed. Discussion. 22500 w. Jour W Soc of Engrs—April, 1912. No. 33110 D.

Coast Erosion and Protection. Ernest R. Matthews. Illustrated study of wave action is given in the present number. 1500 w. Engng—Aug. 30, 1912. Serial. 1st Part. No. 35887 A.

Coast Protection

Coast-Erosion. William Tregarthen Douglass. With abstract of discussion. Discusses forces which operate in the erosion of foreshores and of the bed of the sea in their vicinity, the protection, etc. Plates. 24500 w. Inst of Civ Engrs—No. 3928. No. 29963 N.

The Use of Reinforced Concrete for Surface Protection on Sandy Shores (Verwendung von Eisenbeton zur Befestigung flacher sandiger Seekusten). A. v. Horn. States how concrete anchors and dead-men may be set along the shore to prevent destructive wave action. Ills. 2500 w. Beton u Eisen—Nov. 8, 1911. No. 28875 E.

Coffer-Dams

Coffer-Dam Construction. Willard D. Lockwood. Mainly a discussion of flexibility, illustrating and describing types. General discussion. 6000 w. Jour Am Soc of Engng Cont—Nov., 1911. No. 29980 N.

Types of Cofferdams on the New York Barge Canal. Illustrates and describes types used on Contract No. 80, and Contract No. 10. 2000 w. Eng Rec—Oct. 5, 1912. No. 36544.

Crossings

An Economic Comparison of Bridges, Ferry Bridges and Tunnels as Crossings of Navigable Waterways. From a report by A. Forti, to the Int. Cong. of Nav. Outlines a particular case and examines the characteristics of the three systems under comparison. Ills. 1500 w. Engng & Con—July 24, 1912. No. 34776.

The Comparative Economic and Technical Advantages of Bridges, Ferry Bridges and Tunnels for Crossing Navigable Waterways. Discussion by Mr. Wendemuth before the Int. Cong. of Navigation. 7500 w. Engng & Con—Aug. 7, 1912. No. 35073.

Detroit River

The New Canalized Channels in the Detroit River. James Cooke Mills. Illustrated account of navigation improvement works for the United States and Canada. 3500 w. Cassier's Mag—July, 1912. No. 34911 B.

Dock Machinery

Cargo-Loading and Discharging Appliances at Immingham Docks. Illustrated description of the mechanical equipment of these new docks on the Humber River. Plate. 2500 w. Engng—June 14, 1912. Serial. 1st part. No. 33941 A.

The New Loading and Granary Constructions of the Holland-Amerika Line in Rotterdam (Die neuen Verlade- und Speichereinrichtungen der Holland-Amerika-Linie in Rotterdam). Description of dock machinery and grain elevator, chute, and storage house. Ills. 4800 w. Zeitschr d Ver deutscher Ing—June 1, 1912. No. 33580 D.

Docks

A Reinforced Concrete Oil Loading Dock. Illustrated description of a structure recently built at Port Arthur, Texas. 1200 w. Eng Rec—June 8, 1912. No. 33626.

New Graving Dock on the Tyne. Illustrated detailed description of the new graving dock at South Shields, and other improvements. 3000 w. Engr, Lond—May 31, 1912. No. 33677 A.

The Immigham Dock and Sidings. Illustrated detailed description of a large deep-water dock on the Humber estuary, recently opened for traffic. 1500 w. Engr, Lond—May 17, 1912. Serial. 1st part. No. 33277 A.

The New Immingham Dock. Map and illustrated description of this German structure. 3000 w. Col Guard—Oct. 27, 1911. No. 27728 A.

A Concrete and Steel Ore Dock Having New Features in Its Design. W. E. King. Illustrates and describes details of the fireproof dock of the Great Northern Ry., at Allouez Bay. 2500 w. Eng Rec—March 9, 1912. No. 31084.

Great Northern Ore Loading Dock at Allouez, Wis. Illustrated description of the new steel and concrete dock, near Superior, Wis., for handling very heavy tonnage. 2000 w. Ry Age Gaz—Jan. 26, 1912. No. 30088.

Description of the World's Largest Ore Dock. Illustrates and describes a steel and concrete structure at Allouez, Wis. 2000 w. Ir Trd Rev—Jan. 18, 1912. No. 29691.

Reinforced Concrete in Ore Dock Construction. Illustrated detailed description of the construction of the concrete ore dock at Cleveland, O. 1200 w. Cement Age—March, 1912. No. 31458.

Ore Dock at Cleveland, O. Illustrates and describes a plant including an ore dock, ore stock yard, railway yard, machinery for unloading, loading and for delivery of ore to stock piles. 3000 w. Eng News—Feb. 22, 1912. No. 30718.

A Modern Iron Ore Dock and Unloading Plant. Illustrated description of details of the dock at Cleveland, and of the Hulett unloaders and ore bridge. 3000 w. Ir Trd Rev—April 18, 1912. No. 32201.

Ore Dock with Storage Capacity of 50,000 Tons. Illustrated description of the new steel dock at Presque Isle, Mich. 800 w. Ir Trd Rev—Jan. 4, 1912. No. 29364.

New Ore Dock at Two Harbors. Illustrated description of Duluth and Iron Range No. 1 Dock. 2500 w. Ir Trd Rev —Dec. 28, 1911. No. 29262.

New Ore Dock at Two Harbors, Minn. Illustrates and describes details of a new improved ore loading dock. Steel framing, reinforced concrete bin walls and foundations, and improvements for controlling ore flow, etc. 1500 w. Ry Age Gaz—Jan. 5, 1912. No. 29401.

The New Iron Ore Dock at Port Bolivar. William B. Phillips. Illustrated description of loading facilities on Galveston Bay for the ores of east Texas. 1200 w. Ir Age—Apri 18, 1912. No. 32142 C.

Dock Facilities in New York City; Present Facilities, Proposed Improvements and Enlargements. William J. Barney. Considers the present conditions in the harbor, present facilities, their disadvantages and proposed improvements and extensions. 6000 w. Soc of Nav Archts & Marine Engrs, No. 2.—Nov., 1911. No. 28165 N.

Method and Cost of Constructing a Concrete and Steel Ore Dock for the Duluth & Iron Range R. R. Leland Clapper. Illustrations, with detailed description. 4000 w. Engng & Con—July 17, 1912. No. 34610.

Construction of Permanent Ore-Loading Docks. C. A. Tupper. Illustrated description of the construction and equipment of recently built docks on the Great

Lakes. 1800 w. Min & Engng Wld—Aug. 3, 1912. Serial. 1st part. No. 35058.

The 50,000-Ton Ore Dock at Marquette. Illustrates and describes the design and erection of a wood, steel, and concrete structure for storing iron ore and delivering it rapidly to lake boats. 2500 w. Eng Rec—July 6, 1912. No. 34274.

The Lumber Dock at Balboa, Canal Zone. George R. Goethals. Illustrated description of the design and construction of the first reinforced concrete dock of the type likely to be generally used at Panama. 3000 w. Eng Rec—July 20, 1912. No. 34675.

See also Harbors, under *Waterways and Harbors*, and Floating Docks and Dry Docks, under MARINE AND NAVAL ENGINEERING.

Drainage

Mechanical Engineering Problems in the Drainage of River Bottom Lands. John J. Harman. Read before the Ill. Soc. of Engrs. & Survs. Considers important features of the problem of drainage by pumping. 2000 w. Engng & Con—Jan. 31, 1912. No. 30148.

Land Drainage by Means of Pumps. S. M. Woodward. Information on the effectiveness of drainage reclamation, experience with drainage pumping methods, etc. Ills. 44 pages. U S Dept of Agri, Bul 243—Nov. 8, 1911. No. 30132 N.

Drainage Pumping Plant. H. L. Hutson. Considers the cost of pumping plant and its operation. 3000 w. Mfrs' Rec—Feb. 1, 1912. No. 30188.

Assessments for Benefits from Drainage Systems, for Agricultural and Sanitary Purposes. S. T. Morse. Outlines a system used under the laws of Illinois. 8500 w. Engng & Con—Feb. 21, 1912. No. 30714.

The Division of Costs in Relation to Drainage Systems. J. L. Parsons. A discussion of the underlying principles and explanation of a suggested system. 5000 w. Engng & Con—Jan. 24, 1912. No. 30103.

The Preparation and Enforcement of Drainage Specifications. J. L. Parsons. Gives items in the language and form advocated by the writer, analyzing various requirements and interpretations, discussing matters related. 5000 w. Engng & Con—Dec. 27, 1911. No. 29259.

The Estimation of Costs in Relation to Drainage Systems. J. L. Parsons. Discusses the problem of estimating costs, the factors to be considered, materials, etc. 4500 w. Engng & Con—Jan. 17, 1912. No. 29833.

The Solution of Hydraulic Problems Relating to Tile Drainage. Louis Schmeer. Discusses drainage calculations and methods of tile drainage in use. 2000 w. Engng & Con—Oct. 23, 1912. No. 36961.

Reclaiming Land by Drainage. Hugh R. McVeigh. Illustrated account of projects in lower Mississippi valley embracing 2,300,000 acres. 4000 w. Mfrs' Rec—April 18, 1912. No. 32165.

The Maintenance of Open Drainage Ditches. A. P. Smith. From a paper before the Iowa Engng Soc. Considers some maintenance problems and their solutions. 2000 w. Engng & Con—June 12, 1912. No. 33704.

Construction and Maintenance of Open Drainage Ditches. G. P. Smith. Read before the Iowa Engng. Soc. Considers the proper construction, protection, and maintenance. 2000 w. Eng Rec—Feb. 10, 1912. No. 30351.

Reclamation and Conservation of the Alluvial Lands in the Upper Mississippi Valley, Now and Formerly Subject to Overflow. Charles W. Durham. Illustrated account of methods used in reclaiming these rich lands. 3000 w. Engng & Con—Jan. 3, 1912. No. 29381.

Procedure Followed in Public Drainage Ditch Work in Southern Minnesota with General Costs of Ditch Work. Abstract of a paper by C. W. Gove, read before the Minn. Survs. & Engrs.' Soc. Describes a method of mapping, making profiles and recording surveys and estimates. 3000 w. Engng & Con—March 27, 1912. No. 31621.

The Little River Drainage Works in Missouri. William A. O'Brien. Map and brief description of reclamation work. 2000 w. Eng Rec—June 22, 1912. No. 33883.

Methods of Tile Draining Gumbo, Hardpan, and Seepy Land in Kansas—General Instructions and Costs. H. B. Walker. Abstract of paper before the Kansas Engng. Soc. Discusses methods and gives directions for mapping surveys and estimating costs. 2500 w. Engng & Con—March 27, 1912. No. 31622.

Ditch System for Draining 103,000 Acres in Washington County, Mississippi. Outlines the natural drainage, and explains the plan, giving cost estimates. 5000 w. Engng & Con—April 3, 1912. No. 31792.

Report on the Belzoni Drainage District in Washington County, Mississippi. H. A. Kipp. Describes the location and conditions, with plan for drainage, giving estimate of cost and results expected. Ills.

55 pages. U S Dept of Agri, Bul 244—Feb. 10, 1912. No. 30648 N.

Drainage of the Wet Lands of Effingham County, Ga. F. G. Eason. A report of the present drainage status of this district, discussing possibilities of improving conditions and methods of accomplishing the work suggested. Maps. 5000 w. U S Dept of Agri,. Circ 113—Dec. 22, 1911. No. 29821 N.

Draining Florida Everglades and Results Expected. George Byrne. An account of the project in progress for reclaiming this land. Ills. 3500 w. Mfrs' Rec—Jan. 18, 1912. No. 29688.

A Report Upon the Back Swamp and Jacob Swamp Drainage District, Robeson County, North Carolina. Samuel H. McCrory, assisted by Carl W. Mengel. General description of the area and of the plan recommended, with related matters. Ills. 47 pages. U S Dept of Agri, Bul 246—Jan. 27, 1912. No. 30649 N.

See also Drainage and Reclamation, under *Construction*; and Irrigation, under *Water Supply*.

Dredges

New Dredge Constructions (Neuere Baggerkonstruktionen). Paulmann and Blaum. Shows the design, construction and operation of some new types. Illus. Serial. Part I. 1600 w. Zeitschr d Ver Deutscher Ing—Nov. 18, 1911. No. 28815 D.

See also same heading under MARINE AND NAVAL ENGINEERING.

Dredging

Harbour Dredging. Brysson Cunningham. Illustrates and describes modern machinery for channel improvement. 3000 w. Cassier's Mag—March, 1912. No. 31188 B.

Current Practice in Blasting and Dredging Rock Under Water. Conclusions from a review by W. L. Saunders reported to the Int. Cong. of Nav. 6500 w. Engng & Con—April 24, 1912. No. 32323.

Dredges and Dredging in Mobile Harbor, Alabama; Records and Cost of Dredge Work. Condensed paper by J. M. Pratt, in *Prof. Mem.* A comparison of clam shell and pipe line dredge work as to output and cost. Gives records of work of a seagoing hopper dredge, and other information. 4500 w. Engng & Con—March 20, 1912. No. 31454.

Largest Dredging Plant in the World. Information concerning the fleet owned by the United States Government and engaged on river and harbor work. 4000 w. Eng News—May 9, 1912. No. 32687.

U. S. Government Contract Dredging. Gives a summary of cost of contract dredging, and information concerning the work. 2500 w. Eng News—July 11, 1912. No. 34402.

Cost of Excavating 4,151,000 Cu. Yds. of Material with 51 Dipper, and Bucket Dredges in 1911. Data and information, from a report by Gen. Wm. H. Bixby, relating to work of government owned dredges. 6000 w. Engng & Con—Oct. 16, 1912. No. 36860.

Costs of Dredging 20,000,000 Cu. Yds. of Material in 1911, With 39 Hydraulic Pipe Line Dredges. Tabulated costs and description of work by the U. S. Government compiled from the report of Gen. W. H. Bixby. 6500 w. Engng & Con—Oct. 9, 1912. No. 36759.

See also Rock Removal, under *Waterways and Harbors;* Dredges under MARINE AND NAVAL ENGINEERING; and Dredging, under MINING AND METALLURGY, *Gold and Silver.*

Dry-Docks

An Improvement in Floating Dry Docks. A. C. Cunningham. Describes an improved type of self-docking steel floating dock. 1000 w. Pro U S Naval Inst—June, 1912. No. 33975 E.

Calculations for Floating Docks (Schwimmdockberechnung). D. Muth. Mathematical discussion on the design of floating docks, with tables. 3000 w. Schiffbau—May 8, 1912. No. 33541 D.

The Construction and Operation of Floating Docks (La Construction et les Applications des Docks Flottants). Ch. Wall. Describes various kinds of dry docks, the relative merits of each, and modes of operation. Ills. 6000 w. Tech Mod—Sept. 15, 1912. No. 36673 D.

Construction of Dry Dock No. 4, Brooklyn Navy Yard. H. S. Rinker. An account of the experience of the different contractors, and illustrated detailed description of the work as finally executed. 5500 w. Eng News—July 25, 1912. No. 34788.

Dry Dock New York Navy Yard. Illustrated description of Drydock No. 4, and its construction. 2500 w. Marine Rev—July, 1912. No. 34421 C.

Electrification of the Works of the John N. Robins Company, Erie Basin Dry Docks, Brooklyn, N. Y. William T. Donnelly. Illustrates and describes the equipment, explaining reasons for the change. Also discussion. 7000 w. Pro Brooklyn Engrs' Club, Paper 98—Jan., 1911. No. 28984 N.

Dry-Dock at Port-Arthur, Ont., Canada. A. V. Powell. Illustrated description of a recently completed dock capable of taking the largest vessels on the lakes. Also two shipbuilding berths, a large steel punch shop and a machine shop. 2500 w. Eng News—Nov. 16, 1911. No. 28083.

The Canadian Floating Ship Dock "Duke of Connaught." Illustrated description of one of the largest docks yet built. It is of the double-sided self-docking type. 2000 w. Engng—Aug. 16, 1912. No. 35477 A.

The Montreal Floating Dock "Duke of Connaught." Illustrated description of this dock built in England, and recently delivered at Montreal. 1800 w. Can Engr—Oct. 3, 1912. No. 36584.

The Admiralty 32,000-Ton Floating Dock. Illustrated description of large dock for use in the Medway. 1000 w. Engng—Aug. 2, 1912. No. 35198 A.

The 32,000-Ton Floating Dock for the Medway. Illustrated description of the largest and heaviest floating dock which has been built in Great Britain. 1200 w. Engr, Lond—July 19, 1912. No. 34903 A.

New Graving Dock, Belfast: Mechanical Plant and General Appliances. W. Redfern Kelly. Illustrated detailed description of the plant. 7000 w. Inst of Mech Engrs—July 1912. No. 35200 N.

A Combined Salvage and Testing Dock for Submarine Boats. Robert G. Skerrett. Illustrated description of the Laurenti dock, built for the Italian Government. 1200 w. Int Marine Engng—Aug., 1912. No. 34968 C.

The 40,000-Ton Floating Dry Dock at Kiel (40000 Tonnen-Schwimmdock der Kaiserlichen Werft in Kiel). Description of this dock as recently completed. Ills. and Plates. 4400 w. Schiffbau—Nov. 8, 1911. No. 28808 D.

See also Dry Docks, under MARINE AND NAVAL ENGINEERING

Erie Canal

See Barge Canal, under *Waterways and Harbors.*

Fender Chains

A New Fender Chain and Resistance Unit. Illustrated description of a mechanical device which when subjected to tension exceeding a defined amount extends and offers resistance to the extending force. 500 w. Engr, Lond—March 8, 1912. No. 31267 A.

Flood Prevention

Proposed Flood Prevention, Little Wabash River, Illinois. Map and data from a report concerning the proposed reclamation of some 150,000 acres of land. 2500 w. Engng & Con—Aug. 28, 1912. No. 35618.

Flood Control of the Mississippi River. Address by Col. C. McD. Townsend, before the Interstate Levee Assn. 5500 w. Eng Rec—Oct. 26, 1912. No. 37010.

Flood Protection for Mississippi Valley. Eight papers by different authors on various phases of the protection question, presented at a meeting of the Louisiana Engng. Soc. 17500 w. Jour Assn. of Engng Socs—Sept., 1912. No. 36224 C.

What Is the Remedy for Mississippi Floods? Editorial on the suggestions appearing in recent articles, and the monograph by William Starling, published in 1897, with general discussion of the problem. 3000 w. Eng News—May 23, 1912. No. 33067.

Flood Protection for Mississippi Valley. Discussion at meeting of July 8, 1912. 12800 w. Jour Assn of Engng Socs—Oct., 1912. No. 37030 C.

Protection of Levees During Floods. Arthur Hider. Describes the work of protecting the levees along one section of the Mississippi River during the floods of the past season. Ills. 2500 w. Eng News—Oct. 10, 1912. No. 36753.

River and Harbor Improvements from an Engineering Standpoint. John Millis. Considers the recent flood in the lower Mississippi, and the diminishing levels of the Great Lakes. 7000 w. Jour Cleveland Engng Soc—Sept., 1912. No. 37117 D.

Flood Prevention by Storage Reservoirs in Foreign Countries—General Costs Information taken from an appendix to the report of the Flood Commission of Pittsburgh giving a summary of the work done in Europe and Canada. 9500 w. Engng & Con—Sept. 11, 1912. No. 35908.

Flood Prevention Works in the Province of Silesia in Germany; The Maurer Dam. D. Halton Thomson. Abstract of an article in the London *Times*. Brief account of conditions and protective works. 1000 w. Eng News—Dec. 7, 1911. No. 28645.

Floods

1912 Flood on the Lower Mississippi. A. L. Dabney. On the extent of the recent floods, the damage done to the levees and levee districts, with comments on the repairs and future protection. Ills. 3500 w. Eng News—June 13, 1912. No. 33709.

The Great Mississippi River Flood of 1912. A report of T. G. Dabney, chief engineer. Yazoo-Mississippi delta levee district. 3000 w. Eng Rec—July 6, 1912. No. 34280.

The 1912 Floods in the Ohio and Mississippi Rivers. H. C. Frankenfield. Gives the history of conditions preceding this great flood and describes its progress down the river. 2000 w. Eng News—April 18, 1912. No. 32214.

The Flood Problem of Pittsburgh. Kenneth C. Grant. Map, illustration and account of conditions, with report of investigations of damages, causes and methods of protection. 4500 w. Engr, Lond. July 19, 1912. Serial. 1st part. No. 34899 A.

The Flood of March 22, 1912, at Pittsburgh, Pa. Kenneth C. Grant. A brief description of this flood, with a graphical study of the peak reduction that could have been obtained if the system of storage reservoirs proposed had been in operation. Ills. 6000 w. Pro Am Soc of Civ Engrs—Aug., 1912. No. 35627 F.

Recent Flood in Louisiana. Map, illustrations and report of damage. 800 w. Ry Age Gaz—Aug. 23, 1912. No. 35406.

Flood on the Wisconsin River at and near Wausau, Wis. Illustrated account of damage caused by a heavy rainfall on July 23, 1912. 2000 w. Eng News—Aug. 8, 1912. No. 35094.

The Wisconsin River Flood: Its Causes, Lessons and Repair Work. D. S. Burnett. 1200 w. Eng News—Aug. 29, 1912. No. 35648.

The Cherry Creek Flood, Denver, Colo. Charles W. Comstock. Illustrated description of the flood caused by excessive rainfall on July 14, and of the damage. 2500 w. Eng News—Aug. 15, 1912. No. 35238.

A Flood in the Caloosahatchee River Valley, Florida. W. W. Fineren. Map and profile with account of a flood that caused the waters of the river to push up hill for over 20 miles. 1200 w. Eng News—Sept. 26, 1912. No. 36359.

Forests and Floods on the North Pacific Coast. H. M. Chittenden. Data relating to floods in certain streams of western Washington in Nov., 1911. 2000 w. Eng News—April 11, 1912. No. 31936.

Recent Flood Conditions on the Cedar River, Near Seattle, Wash. George Holmes Moore. Map and outline of the district, describing the flood and relief measures. Ills. 2500 w. Eng News—Dec. 14, 1911. No. 28954.

Observations on the Seine at Paris during the Flood of January, February and March, 1911 (Observations faites sur la Seine a Paris pendent la Crué de Janvier-Fevrier-Mars 1911). M. Arana. Tables and calculations of the quantity of water flowing during this period of extraordinary flood. Plate. 8800 w. Ann des Ponts et Chaussées—Nov., 1911. No. 30596 E + F.

See also Pollution, under *Water Supply;* River Regulation, under *Waterways and Harbors;* Flood Damage, under ELECTRICAL ENGINEERING, *Generating Stations;* Floods, under MINING AND METALLURGY, *Mining;* and Track Reconstruction, and Washouts, under RAILWAY ENGINEERING, *Permanent Way and Buildings.*

Grader

Test of a Mississippi River Suction Grader. Thomas C. Allen. Illustrated description of an equipment for grading the banks of the Mississippi, with report of test. Ills. 1200 w. Int Marine Engng—May, 1912. No. 32595 C.

Great Lakes

The Use of the Great Lakes. Robert R. McCormick. Discusses views in a paper by Gardner S. Williams, and the rights of the Great Lakes in water commerce, power, and sanitation. General discussion. 14500 w. Jour W Soc of Engrs—Feb., 1912. No. 31197 D.

Harbors

River and Harbor Improvement. Gen. William H. Bixby. Discusses economic depth of inland waterways, the reservoir system of river regulation and Federal control of water power development. 4500 w. Eng News—Jan. 11, 1912. No. 29539.

The Year's Progress in River and Harbor Improvements in the United States. Comments by Brig.-Gen. William H. Bixby, at the Nat. Rivers & Harbors Congress. 4000 w. Eng Rec—Jan. 6, 1912. No. 29413.

The Harbors of the Pacific Coast. William Hosea Ballou. Illustrates and describes the Pacific terminal facilities for the Panama Canal trade. 2500 w. Sci Am—Aug. 24, 1912. No. 35412.

Ports of the Pacific. H. M. Chittenden and A. O. Powell. Deals only with ports north of the boundary between Mexico and the United States. Discusses the relations of coast ports; the engineering problems; gives descriptive data, administrative systems, and considers future plans and the influence of the Panama Canal upon International traffic. Map. 20000 w. Pro Am Soc of Civ Engrs—Sept., 1912. No. 37094 F.

Design of Harbor Works at Portland, Ore. C. W. Staniford, E. P. Goodrich, W. J. Barney. Discusses plans for the development of Portland harbor, improvements recommended, dock design, etc. Maps and plans. 7000 w. Eng News—Oct. 10, 1912. No. 36751.

Improvement of Tacoma Harbor. Gives details of a plan to develop and control an important waterfront. 1800 w. Marine Rev—March, 1912. No. 31225 C.

The Great National Port of Canada. Frederick W. Cowie. Illustrates and describes features of important extension works in progress in Montreal harbor. 4000 w. Can Engr—Jan. 18, 1912. No. 29861.

Harbor of Cleveland, O. From an address by Col. John Millis before the Cleveland Chamber of Commerce, showing wherein it excels other lake harbors, and wherein it has failed to take advantage of its opportunities. 2000 w. Marine Rev—June, 1912. No. 33638 C.

The New Valparaiso Port. Information concerning the new works now being placed under contract, and the modifications found necessary. 1200 w. Engr, Lond—May 24, 1912. No. 33465 A.

The Completion of Colombo Harbor, Ceylon. An account of the completion of extensive works covering over 37 years of continuous work. Ills. 3000 w. Engng —May 31, 1912. No. 33674 A.

The Port of Rangoon. Maps and descriptions of improvements at this port, and the methods employed. 1800 w. Engr, Lond—Nov. 24, 1911. No. 28669 A.

I. The Bar Harbors of New South Wales. Gerald Harnett Halligan. (Paper No. 3910.) II. Sand Movements at Newcastle Entrance, New South Wales. Christopher Watkins King. (Paper No. 3881.) III. Fremantle Harbor-Works, Western Australia. Charles Stuart Russell Palmer. (Paper No. 3897.) With an abstract of the discussion on the papers. Plates. 60000 w. Inst of Civ Engrs—Jan., 1911. No. 29959 N.

The Port and Harbor of Havre (France). Plans, cross-sections and description of the development and engineering works of this French port. Also editorial. 5000 w. Eng News—Sept. 19, 1912. No. 36093.

The New Eastern Port in Frankfort (Der Neue Osthafen in Frankfurt a. M.). J. Elink Schuurman. Details of railway yards, port, and harbor machinery. Ills. 3500 w. Zeitschr d Ver deutscher Ing—May 25, 1912. No. 33575 D.

The Opening of the Work on the Soerabaja Harbor (De opening von de werken voor de haven von Soerabaja). Report on the project and the events at the opening ceremonies. 8100 w. Ingenieur—Dec. 9, 1911. No. 29771 D.

See also Ports, under *Waterways and Harbors*; Electric Power, under ELECTRICAL ENGINEERING, *Power Applications*, and Ports, under MARINE AND NAVAL ENGINEERING.

Inland Waterways

The Atlantic Coast Waterway. Reports results of an investigation of the project for an inland waterway from Boston to Beaufort Inlet, N. C. Maps. 4000 w. Eng News—May 16, 1912. No. 32919.

Inland Water-Borne Commerce in the United States. John Ruddle. Discusses conditions and the probability that improvements will not become self-supporting for some time; how the improvements can be most efficiently and economically carried out; principles of operation, etc. 8500 w. Int Marine Engng—June, 1912. No. 33439 C.

The Economic Advantages of Constructing an Inland Waterway Through Tuscany and Umbria to Rome (Relazione sulla convenienza economica di aprire una via di navigazione interna per la Toscana e per l'Umbria alla citta di Roma). R. Penati and P. T. di Revel. Proposed canal uniting the Trasimenus to the Tiber. Ills. and plates. 14000 w. Ann Della Soc d Ing e d Arch Ital—Oct. 1, 1911. No. 28896 E.

Inland Navigation in Italy (Per la navigazione interna in Italia). A series of articles on the inland waterways and ports of Italy. The first article describes the Port of Pavia. Serial. 1st part. Ills. and maps. 6000 w. Monit Tec—Nov. 30, 1911. No. 28898 E.

The Scientific and Economic Advantages in the Construction of an Inland Waterway through Tuscany and Umbria to Rome (Sulla convenienza tecnica ed economica di aprire una via di navigazione per la Toscana e per l'Umbria alla città di Roma). Report of a committee upon the feasibility and desirability of such a project. Maps. 11000 w. Ann della Soc d Ing e d Arch Ital—Feb. 16, 1912. No. 32303 E.

Jetties

How to Build a Stone Jetty on a Sand Bottom in the Open Sea. Henry C. Ripley. Detailed discussion of a method of jetty construction developed in the United States, which possesses remarkable stability and economy. 3500 w. Pro Am Soc. of Civ Engrs—Nov., 1911. No. 28372 F.

How to Build a Stone Jetty on a Sand Bottom in the Open Sea. Discussion of the paper by Henry C. Ripley. 4000 w. Pro Am Soc of Civ Engrs—Jan., 1912. No. 29955 F.

How to Build a Stone Jetty on a Sand Bottom in the Open Sea. Continued discussion of the paper by Henry C. Ripley. 3500 w. Pro Am Soc of Civ Engrs—Feb., 1912. No. 30905 F.

Levees

Methods Used in Effecting the Preliminary Organization of a 450,000-Acre Drainage and Levee Project in Southeastern Missouri. L. T. Berthe. Preliminary map and information. 4000 w. Engng & Con—July 31, 1912. No. 35033.

See also Dams, under *Water Supply;* and Flood Protection, under *Waterways and Harbors.*

Lighthouses

The New French Lighthouse at Ushant. Illustrated description of the electric lighthouse of the "Jument d' Ouessant" and its construction. 2500 w. Engng—July 26, 1912. No. 35164 A.

The Quessant Lighthouse (Le phare d'Quessant). P. Baumont. Describes the difficult construction work of this light off the coast of Brittany. Ills. 2100 w. Rev Industrielle—Aug. 24, 1912. No. 36206 D.

Lock Gates

Accident to Gates of Lock 22, Welland Canal, near Thorold, Ont. Emile Low. Brief illustrated account of the serious accident occurring on June 20, 1912. No. 34399.

Locks

The Panama and Erie Canal Locks—A Contrast. Day Allen Willey. Illustrates and describes methods of construction and important features of these two projects. 2000 w. Cassier's Mag—Dec., 1911. No. 28711 B.

Repairs on the Canal Lock through Voorne to Nieuwesluis (Herstellingen aan de schutluis van het kanaal door Voorne te Nieuwesluis). J. Lely. Detailed description of these repairs. Ills. 2700 w. De Ingenieur—Nov. 4, 1911. No. 28893 D.

Reinforced Concrete Lock Construction by the Hungarian State Water Survey. Describes a lock on the Koros River, at Bokeny. 1800 w. Engng & Con—June 12, 1912. No. 33698.

Two Examples of Reinforced Concrete Canal Lock Construction in Russia. Illustrations with brief descriptions. 1000 w. Engng & Con—June 5, 1912. No. 33478.

Reconstruction of Boulter's Lock. Illustrated account of the rebuilding of this lock on the Thames. 2000 w. Engr, Lond—June 7, 1912. No. 33792 A.

Disappearing Swinging Gates (Waairdeur te Scheveningen). F. C. J. van der Steen. Describes lock-gates working automatically; closed by rising tides and opened by receding tides. Ills. 3500 w. De Ingenieur—May 4, 1912. No. 33582 D.

The Floating Gates of the Lock of the Port of Commerce, Brême-Oslebshausen (Portes flottantes de l'écluse du Port de Commerce de Brême-Oslebshausen). Detailed description with plates. 3200 w. Génie Civil—July 20, 1912. No. 35584 D.

The Bellot-Tancarville Locks at Havre (Note sur l'Ecluse Bellot-Tancarville au Port du Havre). M. Guiffart. The causes for the new work; choice of material; plans for construction adopted, and performances of work. Ills. and plates. 30400 w. Ann d Ponts et Chaussées—July-Aug., 1912. No. 36182 E + F.

See also Panama Canal, under *Waterways and Harbors.*

Mississippi River

Methods and Cost of Damming the Hymelia Crevasse in the Mississippi River. An account of the repairing of a break in the levee, 35 miles above New Orleans. Ills. 2500 w. Engng & Con—Sept. 19, 1912. No. 36025.

See also Floods, under *Waterways and Harbors.*

Montreal

Harbor Development and Improvement at Montreal, Canada. Plan and illustrated description of harbor development steadily in progress to keep in advance of requirements. 8500 w. Eng News—Nov. 9, 1911. No. 27757.

New Orleans

The Improvement of New Orleans Harbor. Sidney F. Lewis. Map and explanation of conditions with report of work done by the U. S. Government and its cost, and work required. 5000 w. Jour Assn of Engng Socs—Nov., 1911. No. 28385 C.

New York

See Water-Fronts, under *Waterways and Harbors.*

Ore Transport

All-Water Transport of German Iron Ore. Stuart Rice. Brief account of what has been done in Germany to furnish cheap water freightage for ore. Ills. 1500 w. Min & Engng Wld—May 11, 1912. No. 32820.

Panama Canal

Annual Report of the Isthmian Canal Commission. Report of George W. Goethals for the year ending June 30, 1911. 63 pages. Isthmian Canal Commission—Nov., 1911. No. 27602 N.

Progress on the Panama Canal. A summary of the report for the year ending June 30, 1911, by Col. George W. Goethals. Ills. 21000 w. Eng Rec—Nov. 11, 1911. No. 27961.

The Panama Canal. John F. Stevens. An interesting address on this great engineering work, its construction, uses, military and commercial value, and related topics. 12000 w. Jour Assn of Engng Socs—Nov., 1911. No. 28386 C.

Panama Canal Traffic and Tolls. Emory R. Johnson. Preliminary statement containing five sections of a report being prepared by direction of the Secretary of War. Information concerning distances, tonnage, tolls, coaling, etc. Maps. 95 pps. U S Gov Print Office—No. 575. No. 37057 N.

Fixing the Tolls on the Panama Canal. Editorial review of a study by Prof. Johnson, which gives much information of the considerations which should govern the fixing of tolls. 2800 w. Eng Rec—March 2, 1912. No. 30979.

Panama Canal and American Commerce. Lewis Nixon. A discussion of steps necessary to protect the interests of the United States. 2200 w. Soc of Nav Archts & Marine Engrs, No. 5—Nov., 1911. No. 28168 N.

Panama Canal Tolls. Charles H. Stockton. Discusses important features in connection with the coastwise trade of the United States, via the Panama Canal. 2000 w. Pro U S Nav Inst—June, 1912. No. 33972 E.

The Panama Canal and Its Influence on Ocean Rates and Traffic. J. Russell Smith. Map, and the probable re-arrangement of routing, and a discussion of far reaching effects expected. 3500 w. Ry Gaz, Lond—July 12, 1912. No. 34713 A.

The Railways and the Panama Canal. Argument over the toll question; discusses the discriminatory effect of the free toll policy, and proposed restrictions on vessel ownership. 4500 w. Ry Age Gaz—July 19, 1912. No. 34667.

Last Stages of the Panama Canal Construction. First of a series of descriptive articles of the final stages of canal construction, with special attention to the mechanical and other equipment provided for the operation and maintenance of safe navigation. Ills. 3000 w. Engr, Lond—Jan. 26, 1912. Serial. 1st part. No. 30326 A.

Panama—Personal Impressions of the Work on the Canal. J. Bernard Walker. First of a series of articles based on a recent visit to the work. Ills. 2000 w. Sci Am—April 20, 1912. Serial. 1st part. No. 32173.

Glimpses of the Panama Canal. E. D. Gilman. Brief outline of the work and the conditions that have made it successful. Ills. 4000 w. Wis Engr—May, 1912. No. 33649 C.

Ten Days on the Panama Canal in April, 1912. G. W. Eves. Reviews the history of the project, describes the general alignment, the excavation work, and dams in the present number. Ills. and map. 6500 w. Engng—Sept. 27, 1912. Serial. 1st part. No. 36727 A.

The Panama Canal (Le Canal de Panama). A. Dumas. A brief history of the undertaking, followed by a general description of the route and plans, and finally an outline of the present stage in construction. Ills. and plates. Serial. 1st part. 25000 w. Génie Civil—May 25, 1912. No. 34005 D.

The Panama Canal (Le Canal de Panama). M. A. Dumas. Reviews the history of the undertaking, the present condition of the work, and the economic consequences. Ills. and plates. 150 pages. Ann d Ponts et Chaussées—March-April, 1912. No. 33587 E + F.

Mechanical Appliances on the Panama Canal. J. F. Springer. Discusses the character of the undertaking and the equipment, and the influence which the work has had on the apparatus used. Ills. 5500 w. Cassier's Mag—Feb., 1912. Serial. 1st part. No. 30288 B.

The Mechanic and the Panama Canal. Fred H. Colvin. General description of the work and conditions showing why so much machine work is necessary. Ills. 2000 w. Am Mach—Dec. 14, 1911. Serial. 1st part. No. 28947.

Building the Equipment for the Panama Canal. Illustrates and describes special castings being made at Wheeling, W. Va. 1800 w. Ir Trd Rev—Sept. 26, 1912. No. 36346.

The Panama Canal Shops at Balboa. Fred H. Colvin. Illustrates and describes these shops at the Pacific end of the canal, the machines used, and work. 2500 w. Am Mach—Feb. 8, 1912. No. 30273.

Keeping Shovels at Work at Panama. Fred H. Colvin. Illustrates and describes methods used to keep the steam shovels in repair so as to lose as little time as possible. 2000 w. Am Mach—Jan. 25, 1912. No. 30110.

Electric Power for the Panama Canal. John George Leigh. Considers the important applications of electricity in the construction and navigation. Ills. 1500 w. Elec Rev, Lond—Jan. 12, 1912. Serial. 1st part. No. 30295 A.

Electricity and the Navigation of the Panama Canal. John George Leigh. First of a series of articles on the electrical features and applications. Ills. 2500 w. Elec Engr, Lond—Jan. 12, 1912. Serial. 1st part. No. 29889 A.

Industrial Motor Applications on the Panama Canal. F. C. Hanker. Illustrates and describes work accomplished by electric power in constructing the canal. Map. 2000 w. Elec Jour—March, 1912. No. 31598.

The Operation of the Locks of the Panama Canal. Describes the method of control at the Gatun locks, as given in the *Canal Record.* 2500 w. Eng Rec—March 2, 1912. No. 30983.

The Locks of the Panama Canal (Les Écluses du Canal de Panama). L.-G. Levy. Description of the constructive and operative features of the locks from the French point of view. Ills. Serial. 1st part. 2200 w. Tech Mod—June 15, 1912. No. 34580 D.

The Lock Machinery Control of the Panama Canal. Gives the description of the system as given in a recent number of the *Canal Record.* 2000 w. Wis Engr —Oct., 1912. No. 37028 C.

Panama Canal Dredge "Corozal." William G. Comber. Gives illustrated description with results of speed and endurance tests of the 1200-cu. yd. per hour ladder dredge. 2500 w. Eng News—Jan. 25, 1912. No. 30092.

The Character of the Reported Volcanic Heat in Culebra Cut, Panama Canal. Information from the official report explaining the cause. 2000 w. Engng & Con—March 27, 1912. No. 3161

Slides in the Culebra Cut at Panama. Donald F. McDonald. A review of geological conditions in the canal site, with an illustrated description of the types of slides and their causes. Reviews geological conditions. 5500 w. Eng Rec—Aug. 31, 1912. No. 35654.

The Extent and Volume of Earth Slides at Culebra Cut, Panama Canal, and the Remedy Being Employed. Contains maps and explanation of causes and the remedies. 800 w. Engng & Con—Oct. 2, 1912. No. 36471.

Cost of Slides and Breaks in Culebra Cut, Panama Canal, in Cubic Yards of Excavation. Information from the *Canal Record* concerning the more important slides. 1000 w. Eng News—Oct. 3, 1912. No. 36570.

Creep in the Panama Canal. Frank G. Carpenter. Illustrates and describes conditions and the methods of dealing with the large moving masses of earth and rock. 2000 w. Mines & Min—Aug., 1912. No. 34945 C.

The Miraflores Spillway of the Panama Canal. Edward C. Sherman. Explains the purpose of the spillway, describing its design and operation. Drawings. 2000 w. Eng Rec—Aug. 3, 1912. No. 35016.

Backwater Wave in the Spillway Channel, Gatun, Panama Canal. Edward C. Sherman. Explains conditions, the dangers and investigations to avert damage. Ills. 1000 w. Eng News—April 25, 1912. No. 32374.

Detonator Troubles and Investigations on the Panama Canal. Arthur L. Robinson. From paper before the Int. Cong. of Ap. Chem. An account of troubles encountered and overcome. 2500 w. Eng Rec—Sept. 21, 1912. No. 36060.

Hydraulic Excavation at Panama. Fred H. Colvin. Illustrated description of the pumping plant and dredging equipment used to remove the overlying loam. 600 w. Power—Sept. 24, 1912. No. 36239.

See also Panama Canal Tolls, under INDUSTRIAL ECONOMY; Gears, under MECHANICAL ENGINEERING, *Machine Elements and Design*, and Panama, under RAILWAY ENGINEERING, *New Projects.*

Piers

The Latest Municipal Pier at Philadelphia. Illustrated description of pier No. 19, built of concrete and steel. 1500 w. Eng Rec—Jan. 6, 1912. No. 29414.

A Miscellaneous Freight Pier at Communipaw, N. J. Illustrated description of a concrete dock, with steel shed and creosoted timber substructure. 2500 w. Eng Rec—Nov. 4, 1911. No. 27710.

Reinforced Concrete Substructure of the Havana Docks Company's Piers. Illustrates and describes work interesting on account of the design of piers and the fabrication and driving of piles. 2000 w. Eng Rec—April 27, 1912. No. 32393.

Extension of the Old Pier at Hartlepool. John Drysdale Hawkins. Describes the building of a new pier-head by means of interlocking concrete blocks. Ills. 2000 w. Inst of Civ Engrs—No. 3961. No. 37031 N.

Pollution

See same heading under *Water Supply.*

Ports

Notes on the Work in Progress and Projected at the Port Saint Nazaire (Note sur les Travaux en cours et en projet au Port de Saint Nazaire). Ed. Épinay. Description of the enlargement work under way and to be done at this port. Ills. 7000 w. Ann d Ponts et Chausées—May, June, 1912. No. 34570 E + F.

The Work of Enlarging and Improving the Port of Havre (Les travaux d'agrandissement et d'amélioration du port du Havre). Ch. Dantin. Outline of the works under way and the plans for adding new anchorage within extended new dikes. Ills. and maps. 10,000 w. Génie Civil—June 29, 1912. No. 34586 D.

The Works at the Port of Valencia, Spain (Les Travaux du port de Valence, Espagne). Describes novel construction methods used in building breakwaters. Ills. and plate. 3200 w. Génie Civil—Aug. 10, 1912. No. 35590 D.

See also same heading, under MARINE AND NAVAL ENGINEERING.

River Improvement

Waterway Improvements. Lewis M. Haupt. Gives analysis of methods of improvement adopted in work of the U. S. Government. 3500 w. Jour Fr Inst—Oct., 1912. No. 37107 D.

Methods of River Improvement by Regulation and Dredging—Possibilites of Reservoirs. Abstract of a paper by William W. Harts, read before the Int. Cong. of Nav. A review of American practice. 7500 w. Engng & Con—July 24, 1912. No. 34773.

Government Improvement of the Upper Mississippi River. J. E. Kaulfuss. Information concerning the scope of the work. 3000 w. Wis Engr—Feb., 1912. Serial. 1st part. No. 30880 C.

Improving Upper Mississippi River. E. F. Linderman. Describes the character of the works and the methods of executing them. Ills. 3000 w. Eng News—April 11, 1912. No. 31935.

The Improvement of the Neponset River in Massachusetts. An account of improvements to remedy unsanitary conditions caused by the recent flooding of the river. 1400 w. Eng News—June 27, 1912. No. 34111.

The Improvement of the Neponset River in Massachusetts. Edmund M. Blake. Describes improvements to overcome unsanitary conditions. 1500 w. Eng Rec—June 1, 1912. No. 33298.

Improvements Along the Rhone (Les Travaux d'Amélioration du Rhone). M. Armand. Discusses improved channel construction between Lyons and the sea. Plates. 22000 w. Ann des Ponts et Chaussées—Nov., 1911. No. 30595 E + F.

Improving the Channel of the La Plata River (Verbetering van het vaarwater der La Plata-rivier). H. Van Rees. Describes dredging operations at Buenos Aires, Argentine Republic. Ills. and map. 1800 w. De Ingenieur—July 6, 1912. No. 35566 D.

See also Floods, under *Waterways and Harbors*, and Barges, under MARINE AND NAVAL ENGINEERING.

River Regulation

The Proposed Reservoir System of the Allegheny and Monongahela Rivers. Extracts from a forthcoming report of the Nat. Waterways Commission. Also "The Flood of March 22, at Pittsburg, Penn." Kenneth C. Grant. Description. 3500 w. Eng News—April 4, 1912. No. 31801.

Notes on the Regulation of the River Nile. A. W. Robinson. Gives a brief account of the present stage of the engineering works carried out by the Irrigation Department. 5000 w. Can Soc of Civ Engrs—Feb., 1912. No. 30911 N.

A Project for the Regulation of the River "Dranse" by Means of Three Successive Chutes (Projet d'Aménagement de la Rivière la Dranse au Moyen de Trois Chutes Successives). E. Pacoret. Proposed plan for the regulation of this river in times of flood, in combination with a water power plant. Plate. 6500 w. Technique Moderne—March 1, 1912. No. 31397 D.

See also Floods under *Waterways and Harbors.*

Rivers

The Causes of River Deviation. T. S. Ellis. Discusses the influence of tributaries and other causes, especially with reference to rivers in India. Ills. 2000 w. Engr, Lond—Dec. 15, 1911. No. 29190 A.

River Trade

Why Steamboat Traffic Declined before the Railway. Paul W. Brown. Investigates the causes of the decline of river trade in the West. 7000 w. Ry Age Gaz—Jan. 12, 1912. No. 29553.

Shore Lands

Submerged and Shore Lands of Illinois. Review of the findings by the Legislative Investigating Committee. 3500 w. Eng Rec—Jan. 13, 1912. No. 29598.

Shore Protection

Concrete Mattress Bank Protection. Describes a mattress made of concrete blocks tied together with wire which has proved very successful on the Yulari River, in Japan. Ills. 2500 w. Eng News—May 16, 1912. No. 32918.

Revetment Construction for a Railroad Bridge on the Missouri River. A. A. Schenck. Illustrates and describes a method of placing a willow mat and account of its service against erosion. 2000 w. Eng Rec—March 2, 1912. No. 30980.

Shore Protection Along the Po (Sulle difese frontali lungo Po). Review of paper by Prof. Bonati on various proposals for dikes, etc., on the Po in time of flood. Ills. 2400 w. Monit Tecnico—Mar. 10, 1912. No. 32306 D.

A New Protection for River and Railway Banks (Ein neuer Ufer- und Böschungschutz). Anton Fitzinger. Describes a process for tying and anchoring concrete blocks in revetment work. Ills.

1800 w. Beton u Eisen—Apr. 20, 1912. No. 32711 E.

Lowestoft Sea Defences. G. H. Hamby. Describes the troubles experienced on this coast of the North Sea and what has been done for the protection during the past 25 years. Also discussion. 4000 w. Surveyor—June 28, 1912. No. 34318 A.

See also Causeways, under *Construction.*

Southampton

Port of Southampton. Mark Meredith. An illustrated account of the development of this important English port. 3500 w. Cassier's Mag—May, 1912. No. 33025 B.

Stream Flow

Caging Minnesota Streams in Winter. W. G. Hoyt. Describes methods employed and results obtained from the survey. 3000 w. Eng News—Sept. 12, 1912. No. 35929.

Deforestation and Stream Flow With Special Reference to the Upper Mississippi River and Two of Its Navigable Tributaries, the St. Croix and the Chippewa. Charles W. Durham. Concludes that the destruction of the pine forests in Wis. has had no effect whatever. 3000 w. Engng & Con—Oct. 16, 1912. No. 36866.

Submarine Excavation

Methods of Submarine Rock Drilling With Drill Boats, With Records of Performance—Detroit River Improvement. From an article by C. J. Levey in *Mine and Quarry*, describing the construction and operation of the drill boat "Hurricane" on work on the Livingstone Channel. Ills. 3500 w. Engng & Con—Oct. 9, 1912. No. 36758.

A Review of Methods Employed for Removing Subaqueous Rock. Abbreviated review of methods given by Michael Koch in a report to the Int. Cong. of Nav. 3000 w. Engng & Con—May 29, 1912. No. 33305.

Methods and Costs of Operating Loebnitz Rock Breakers and Drill Boats on the Panama Canal. Reprint of data given by S. B. Williamson in a report to the Int. Cong. of Nav. 1500 w. Engng & Con—May 29, 1912. No. 33304.

Methods and Costs of Rock Excavation in the Harbors of Aviales, San Esteban de Pravia, and Port de Bilbao, Spain. Gives an account of the use of a Lobnitz rock breaker in three Spanish harbors, as described by Ramon Hernandez in a paper before the Int. Cong. of Navigation. 4000 w. Engng & Con—June 19, 1912. No. 33820.

Terminals

Cargo Transference at Steamship Terminals. H. McL. Harding. Aims to show the importance of terminals in water transportation, and the adaptation of improved mechanical methods to the rapid handling of freight. Ills. 6000 w. Soc of Nav Archts & Marine Engrs, No. 14—Nov., 1911. No. 28177 N.

Mechanical Equipment of Sea Port and Inland Waterway Terminals. H. McL. Harding. Considers important freight movement that should be performed by machinery, and provided at terminals. Ills. 3000 w. Int Marine Engng—June, 1912. No. 33438 C.

The Marine Terminal of the Grand Trunk Pacific Railway, Prince Rupert, British Columbia. Frank E. Kirby and William T. Donnelly. Detailed description of this terminal and its development. Plates. 6000 w. Soc of Nav Archts & Marine Engrs, No. 13—Nov., 1911. No. 28176 N.

See also same heading, under ELECTRICAL ENGINEERING, *Power Applications.*

Water-Fronts

The Problem of the Lower West Side Manhattan Water-Front of the Port of New York. B. F. Cresson, Jr. Describes the economic conditions and commercial necessities, and outlines a plan for relief. Ills. 5000 w. Pro Am Soc of Civ Engrs —Jan., 1912. No. 29949 F.

The Problems of the Lower West Side Manhattan Water-Front of the Port of New York. Continued discussion of the paper by B. F. Cresson, Jr. 4000 w. Pro Am Soc of Civ Engrs—May, 1912. No. 33221 F.

The Problem of the Lower West Side Manhattan Water-Front of the Port of New York. Discussion of the paper by B. F. Cresson, Jr. 7800 w. Pro Am Soc of Civ Engrs—March, 1912. No. 32135 F.

The Problem of the Lower West Side Manhattan Water-Front of the Port of New York. Continued discussion of the paper by B. F. Cresson, Jr. 13000 w. Pro Am Soc of Civ Engrs—April, 1912. No. 32385 F.

Waterways

The National Waterways Commission. Gives a summary of the conclusions and recommendations contained in the Commission's final report. 5000 w. Eng News —April 25, 1912. No. 32373.

Wave Impact

Wave Impact on Engineering Structures. Arnold Hartley Gibson. Report of investigations and conclusions. 5500 w. Inst of Civ Engrs, No. 3952—May, 1912. No. 33161 N.

The Influence of Navigation upon Water Disturbance in Canals and upon the Destruction of Canal Banks (Over den invloed van de scheepvaart op de waterbeweging in kanalen en op de aantasting van den kanaal bodem). P. J. van Voorst Vader, Jr. Discussion upon the destructive action of waves in canals. 2600 w. De Ingenieur—April 14, 1912. No. 32743 D.

Wharves

Public Wharves and Terminals. From a statement of the modern theory of ownership and control of port facilities deduced from leading American authorities by Gen. H. M. Chittenden, in the *Ry & Marine News*. 2000 w. Ry & Engng Rev—May 11, 1912. No. 32825.

A Reinforced-Concrete Wharf at Bilboa, Canal Zone. Illustrates and describes details of construction. 1200 w. Eng News —Dec. 21, 1911. No. 29117.

Reinforced Concrete Lumber Wharf for the Panama Railroad. Methods of Sinking Concrete Caissons and Progress of Construction. Illustrated description. 1800 w. Engng & Con—Jan. 17, 1912. No. 29828.

The Kansas City Municipal Wharf. Clark R. Mandigo. Illustrates and describes details of a wharf and wharfhouse, equipped with freight handling machinery. 2500 w. Eng News—Jan. 25, 1912. No. 30091.

Light Reinforced-Concrete Wharfing Used in the Port of Madras. Francis Joseph Edward Spring. Describes conditions, the kinds of wharf now in use, and the mode of erection. Ills. 1500 w. Inst of Civ Engrs, No. 3942. No. 30491 N.

Light Reinforced Concrete Wharves, Madras, India. F. J. E. Spring. Abridged from Min. of Pro. of Inst. of Civ. Engrs. Illustrates and describes details. 1700 w. Eng News—May 2, 1912. No. 32571.

Canadian Northern Pacific Railway Company's Wharf at Port Mann, B. C. W. G. Swan. Illustrated description of this wharf and features of its construction. 2200 w. Can Engr—March 14, 1912. No. 31201.

Types of Structures Used on the Bordeaux Wharves in the Last Twenty-Five Years (Note sur les Types de Murs de Quai adoptés a Bordeaux dans les vingt-cinq dernières Années). P. Barrillon. Descriptive. 13600 w. Ann d Ponts et Chaussées—July-Aug., 1912. No. 36183 E + F.

See also Reinforced Concrete, under *Construction*.

MISCELLANY

Address

Prof. Barr's Address to Section G of the British Association. Abstract of an address at Dundee. A critical review of the works of engineers in various fields. 5500 w. Elect'n, Lond—Sept. 6, 1912. No. 35986 A.

Africa

Engineering on the Gold Coast. W. H. Barker. Illustrates and describes harbor and transportation work on the west coast of Africa. 1200 w. Cassier's Mag—March, 1912. No. 31186 B.

Agricultural Implements

Ancient European Plows (Les Anciennes Charrues d'Europe). H. Chevalier. A historical sketch of the plows and plowing methods employed in early European agriculture, as illustrated by old cuts. 11500 w. Mem Soc Ing Civ de France—Jan., 1912. No. 32080 G.

Australia

Engineering Development of Sydney. G. A. Julius. President's address before the Engng. Assn. of N. S. W., discussing some engineering problems. 2500 w. Aust Min Stand—March 28, 1912. Serial. 1st part. No. 32826 B.

China

China and Chinese Engineering. W. D. B. Dodson. An interesting review of past and present conditions and the help needed for future development. 5000 w. Jour Assn of Engng Socs—Feb., 1912. No. 31195 C.

Conventions

Address at the 44th Annual Convention, Seattle, Washington, June 25, 1912. John A. Ockerson. Presidential address. 3500 w. Pro Am Soc of Civ Engrs—Aug., 1912. No. 35628 F.

Drawings

A New Process for Reproducing Drawings on Paper, Cloth, etc., Instantaneously (Nouveau Procédé pour la Reproduction Instantanée des Calques sur tous Papiers, Toiles, etc.). M. H. Claude. Description of the so-called "graphitic" process. 3000 w. Mem Soc Ing Civ de France—Dec., 1911. No. 31388 G.

Encyclopedia

The Engineer and the Encyclopedia. Henry Harrison Suplee. Explains the usefulness of great reference books to the specialist. 4500 w. Cassier's Mag—Dec., 1911. No. 28714 B.

Glacial Action

The Problem of Glacial Erosion (Le Problème de l'Érosion Glaciare). P. Morin. A study of glacial action. Ills. 8500 w. Rev Gen des Sciences—Oct. 15, 1911. No. 28488 D.

Hailstorms

The Prevention of Hailstorms. Abstract translation from *Le Génie Civil* giving an outline of what has been achieved in France, also editorial. 2500 w. Engr Lond—Nov. 10, 1911. No. 28135 A.

Lumbering

Engineering Features of a Large Southern Lumbering Development. The features include a logging railroad through a dense swamp, heavy skidding cableways, and an industrial town improved with sanitary works. Ills. 2500 w. Eng Rec—Oct. 26, 1912. No. 37004.

Observatory

The Turret Equatorial Telescope. James Hartness. Illustrated detailed description of a new type of astronomical observatory, designed to protect the observer from the cold. Accomplished by making instrument and building integral. 3500 w. Jour Am Soc Mech Engrs—Dec., 1911. No. 28732 C.

Philippines

Philippine Public Works. Excerpts from the annual report of Charles B. Elliott. Gives an outline of results in the different divisions of the Bureau of Public Works. Ills. 2500 w. Far East Rev—Jan., 1912. No. 31010 N.

Photography

Engineering Photography. Lyman B. Jackes. Suggestions, and description of methods used in such work. 3500 w. Can Engr—March 7, 1912. No. 31111.

The Use of the Camera in Industrial Plants. Illustrates and describes some of the many uses of the camera in the mill, the workshop and afield. 3500 w. Ir Age—Aug. 22, 1912. No. 35340 C.

Sahara Desert

A Plan for Converting the Sahara Desert Into a Sea. G. A. Thompson. Discusses what the effects would be of flooding the great desert. Ills. 3000 w. Sci Am—Aug. 10, 1912. No. 35105.

Subways

A Subway Delivery Entrance at the Rockefeller Estate. Brief illustrated description of an underground passageway for hiding trucks from sight and reducing noise. 1000 w. Eng Rec—Nov. 4, 1911. No. 27711.

Tropics

Civil Engineering Work in the Tropics. William J. Millard. Suggestions to engineers concerning the precautions necessary to maintain good health, and suggests suitable clothing. 2000 w. Eng Rec—Dec. 30, 1911. No. 29229.

The Engineer in the Tropics. T. Lane Carter. Facts concerning proper dress, diet and habits necessary to maintain health, the prevalent diseases and their treatment, etc. Ills. 4500 w. Min Mag—Aug., 1912. No. 35466 B.

Engineering in the Tropics; West African Experiences. A descriptive letter from E. Blockley. 1800 w. Eng News—Feb. 22, 1912. No. 30722.

United States

Engineering in United States in 1911. Reviews the notable features of the year in the different engineering fields. 2500 w. Engr, Lond—Feb. 9, 1912. Serial. 1st part. No. 30676 A.

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COMMUNICATION

Calibration

Calibration in Long Distance Telephony (Die Frage der Eichung der Fernsprechleitungen auf der Pariser Konferenz 1910). E. F. Petritsch. Standardization as discussed by the electrical conference in Paris. 6400 w. Zeit d Oest Ing u Arch Ver—Nov. 8, 1911. No. 28826 D.

England

The Passing of the National Telephone Company. Concerning the transfer by which the Government assumes the responsibility for all the telephone service of the United Kingdom with the exception of Portsmouth and Hull. 2500 w. Elect'n, Lond—Jan. 5, 1912. No. 29660 A.

Telegraphy and Telephony. W. A. J. O'Meara. Abstract of a lecture delivered before the Yorkshire Local Section of the I. E. E. Describes apparatus and lines in Great Britain particularly. 3500 w. Elect'n, Lond—May 31, 1912. No. 33662 A.

Exchanges

Automatic Private Branch Exchange Development in San Francisco. Gerald Deakin. Describes briefly the apartment house and the commercial automatic private branch exchange systems as developed in San Francisco, their advantages, disadvantages and cost. 9800 w. Pro Am Inst of Elec Engrs—April, 1912. No. 32428 F.

Discussion on "Automatic Private Branch Exchange Development in San Francisco." Discussion of Gerald Deakin's paper, at Portland, Ore., April 17, 1912. 3000 w. Pro Am Inst of Elec Engrs—Sept., 1912. No. 36316 F.

The Application of Automatic Selecting Devices to Telephone Multiple Switchboards. Alfred H. Dyson. Discusses means and results obtained by the application of selective switches to common battery multiple telephone switchboard systems. 4500 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33233 F.

Automatic Telephone Exchanges. Illustrated explanation of this system as being introduced into England. 3500 w. Engr, Lond—Dec. 1, 1911. No. 28766 A.

Chicago's New Automatic Telephone System. Illustrated detailed description of the construction and operation of the equipment. 5000 w. Elec Rev & W Elect'n —Dec. 16, 1911. No. 29015.

New "Avenue" Telephone Exchange, London, E. C. Illustrates and describes details differing from usual telephone practice. 2500 w. Elect'n, Lond—Jan. 12, 1912. No. 29895 A.

Fault Location

See Telephone Cables, under *Communication.*

Fire Alarms

Fire Alarm Systems. Brief illustrated description of a modern installation. 1200 w. Elec Rev & W Elect'n—Oct. 26, 1912. Serial. 1st part. No. 37042.

The Installation and Operation of an Automatic Hot-Journal Alarm System. H. G. Wilson. Illustrated description of the installation of an alarm disigned more especially for use in grain elevators and other dusty places. 2000 w. Elec Rev & W Elect'n—Sept. 28, 1912. No. 36386.

Impedance

The Impedance of Telephone Receivers as Affected by the Motion of Their Diaphragms. A. E. Kennelly and G. W. Pierce. Report of investigations. 4000 w. Elec Wld—Sept. 14, 1912. No. 35974.

Leakage

Distributed Leakage in Telephone and Telegraph Systems. Frank F. Fowle. A comparison of methods for measuring resistance of insulation between open wires. 2500 w. Elec Wld—March 9, 1912. No. 31117.

Oscillograms

Some Interesting Applications of the Oscillograph. H. H. Galleher. **Explains** its usefulness in testing, designing and timing and other applications. Ills. 1600 w. Elec Jour — May, 1912. No. 33210.

Some Points in the Use and the Theory of the Oscillograph. J. K. A. Wertheim Salomonson. Discusses the design of transformer and oscillograph (particularly in reference to damping) when they are used in conjunction with a microphone for the production of vocal curves. 3000 w. Elect'n, Lond—June 7, 1912. No. 33773 A.

Oscillographic Experiments in Telegraph Relays (Oszillographische Untersuchungen an Telegraphenrelais). J. Zelisko. Experimental studies in telegraphic relay lines and apparatus. Ills. 5600 w. Elektrotech u Maschinenbau—April 28, 1912. No. 32737 D.

A New System of Impact Excitation of Continuous Electrical Oscillations and Their Application to Wireless Telephony. E. Leon Chaffee. A brief study of this new system with notes on its successful application to wireless telephony. Ills. 10,000 w. Jour Fr Inst—May, 1912. No. 33200 D.

See also Commutation, under *Dynamos and Motors.*

Philippines

Wireless for the Philippines. Gives a resumé of recommendations with maps from the preliminary report of the Philippine Wireless Board. Also shows telegraph lines and cables. 4000 w. Far East Rev—Sept., 1911. No. 28004 N.

Photo-Telegraphy

The Present State of Photo-Telegraphy (Der heutige stand der Bildtelegraphie). G. Eichhorn. Brief description of sending and receiving apparatus and some results. Ills. 3000 w. Oest Wochenschr f d Oeff Baudienst—Jan. 4, 1912. No. 30550 D.

Pole Lines

Design of Telephone Pole Lines for Conditions West of the Rocky Mountains. A. H. Griswold. Describes principally the practice of the Pacific Telephone & Telegraph Co. Ills. 5000 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33235 F.

Radiotelegraphy

Radio-Telegraphy. G. W. Osborn Howe. Explains the general principles underlying all systems, indicating the trend of improvements during the last few years. Ills. 7000 w. Jour Soc of Arts—Feb. 2, 1912. No. 30387 A.

The Present Position of Wireless Telegraphy. Count George von Arco. From a paper reprinted in the *All. Elek. Gesell. Jour*. Reviews the progress of the last few years. 2500 w. Eng News—April 25, 1912. No. 32372.

The Marconi System of Wireless Telegraphy. Outlines the working system. Ills. 1500 w. Elect'n, Lond—April 26, 1912. Serial. 1st part. No. 32833 A.

Marconi Lecture Before New York Electrical Society. Reviews the chief features discussed by the speaker on April 17. 3000 w. Elec Wld—April 27, 1912. No. 32454.

Wireless Telegraphy and Telephony. Considers the economic and technical development of wireless telegraphy and telephony in recent years. 5500 w. Jour Ry United Serv Inst—July, 1912. Serial. 1st part. No. 35334 N.

The Scientific Theory and Outstanding Problems of Wireless Telegraphy. A discussion at meeting of the British Assn., introduced by Prof. A. Fleming. (Abstract.) 11000 w. Elec Rev, Lond—Sept. 13, 1912. Serial, 1st part. No. 36247 A.

The Scientific Theory and Outstanding Problems of Wireless Telegraphy. J. A. Fleming. Introductory remarks at a joint discussion by Sections A and G at the meeting of the British Assn. 13000 w. Elect'n, Lond—Sept. 13 and 20, 1912. Serial. 2 parts. No. 36914 each A.

The Propagation of the Waves of Wireless Telegraphy Around the Earth. H. W. March. An explanation of the process by which wireless telegraphy overcomes the curvature of the earth. 2000 w. Wis Engr—Oct, 1912. No. 37024 C.

On Certain Phenomena Accompanying the Propagation of Electric Waves Over the Surface of the Globe. W. H. Eccles. Contribution to discussion on Wireless Telegraphy at the Dundee meeting of the British Assn. 7000 w. Elect'n, Lond—Sept. 27, 1912. No. 36718 A.

Girdling the Globe by Wireless. Dudley Harmon. An illustrated account of the plan of the U. S. Navy Department to construct a chain of wireless stations connecting two oceans and a continent. 1200 w. Sci Am—April 20, 1912. No. 32172.

Electric Waves Directed by Wires for Intercommunication Purposes. George O. Squier. Lecture before the N. Y. Elec. Soc. Describes experiments in this field. 1500 w. Elec Rev & W Elect'n—Nov. 18, 1911. No. 28160.

Discussion on "Multiplex Telephony and Telegraphy by Means of Electric Waves Guided by Wires." Chicago, June 28, 1911. Paper by George O. Squier is discussed. 8000 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28210 F.

Some Quantitative Experiments in Long-Distance Radiotelegraphy. L. W. Austin. Gives results of work for the determination of the range of communication between two cruisers and between cruisers and the Brant Rock station. 6500 w. Bul Bureau of Stand—Oct., 1911. No. 29092 N.

The Development of Syntonic and Directive Wireless Telegraphy. S. M. Powell. Abstract from a paper read by Lieut. Tissot at the Conf. de la Tech. Mod. Discusses syntony and its limitations, directive wireless telegraphy, etc. Diagrams. 2500 w. Elec Rev, Lond—Dec. 15, 1911. No. 29217 A.

Efficiency of "Earths" in Radiotelegraphy. Charles A. Culver. Reports experimental investigation of the variation in efficiency with size and position of earth wire. 1500 w. Elec Wld—Dec. 2, 1911. No. 28595.

A Generator for High-Frequency Wireless-Telegraph Currents. S. M. Powell. Explains the theory of Prof. Arnold's machine which has been developed by the Lorenz Co. (Berlin). 1500 w. Elec Rev, Lond—Nov. 24, 1911. No. 28653 A.

Logarithmic Chart for Calculating the Frequency and Wave-Length of Oscillating Circuits. R. H. Marvin. Gives an alignment chart for shortening these calculations, explaining its application. Also editorial notes. 1600 w. Elec Wld—Jan. 13, 1912. No. 29642.

Operation of Detectors in Wireless-Telegraph Service. L. H. Harris and John L. Hogan, Jr. Reports investigations of the sensitiveness of contact detectors as a function of pressure. 1600 w. Elec Wld—Dec. 30, 1911. No. 29245.

Recent Experiments on Directive Wireless Telegraphy with Earth Antennæ. F. Kiebitz. Abbreviated translation from the German. Describes investigations with "earth antennæ," conductors supported horizontally just above the ground. 3500 w. Elect'n, Lond—March 8, 1912. No. 31247 A.

Some Experiments in "Wired-Wireless" Telegraphy for Field Lines of Information for Military Purposes. George O. Squier. Describes preliminary experiments involving a combination of these two methods for field service. Ills. 2000 w. Jr Fr Inst—April, 1912. No. 32162 D.

Electrostatic Effects in Receiving Transformers for Radiotelegraphy. G. W. O. Howe. Shows that the sensitiveness depends on the mode of earthing the transformer relatively to the aerial. 500 w. Elect'n, Lond—March 29, 1912. No. 31881 A.

The Determination of Wave-Length in Wireless Telegraphy (Mesure des Longueurs d'Onde en Télégraphie sans Fil). R. Jouaust. Mathematical discussion. Diagrams. 9500 w. Bull Soc Int d'Électriciens—May, 1912. No. 33590 F.

Notes on the Operation of Inductively Coupled Receiving Sets in Wireless Telegraphy. J. O. Mauborgne. Abbreviated from U. S. Army Signal School, Conference No. 14. Gives results of investigation. 3000 w. Elect'n, Lond—July 19, 1912. No. 34885 A.

The Low-Frequency Circuit in Spark Telegraphy. L. B. Turner. Investigates this system with special reference to musical note transmitters. 3500 w. Elect'n, Lond—Aug. 2, 1912. No. 35192 A.

The Mercury Break for Wireless Telegraphy. Philip R. Coursey. Drawing and description of apparatus and results of tests. 1700 w. Elect'n, Lond—Sept. 6, 1912. No. 35987 A.

The Production of Electrical Oscillations by Spark-Gaps Increased in Running Liquids. W. H. Eccles and A. J. Makower. Read before the British Assn. Gives results obtained in experiments with various liquids and various forms of spark-gaps. 1500 w. Engng—Sept. 13, 1912. No. 36269 A.

Utilization of Both Waves Emitted from Closely Coupled Transmitters in Radiotelegraphy. W. Forikata and E. Yokoyama. Gives results of experiments in Japan. It was found that a single wave was more effective than when both waves were utilized. 2000 w. Elect'n, Lond—Oct. 11, 1912. No. 36918 A.

Wireless Telegraphy in Horology, Navigation and Cartography. S. M. Powell. Notes from articles in *La Lumière Elec.* and the Supplement to *La Tech. Mod.* Its use in the transmission of time signals and the determination of differences of longitude. 3000 w. Elec Rev, Lond—April 5, 1912. No. 31908 A.

Radiotelegraphy with Special Regard to Ship Installations. Director Bredow. Abstract translation of a paper read before the Schiffbautechnische Gesellschaft. Remarks on development and matters relating to ship stations. 3500 w. Engng—May 3, 1912. No. 32885 A.

Recent Developments in Wireless Telegraphy: With Special Reference to Ship Installations. Notes on statements made by Dr. H. Bredow in a communication to the 1912 *Jahrbuch der Schiffbau techniker Gesellschaft.* Strongly favors the Telefunken system. 3000 w. Elec Rev, Lond—Oct. 18, 1912. Serial. 1st part. No. 37066 A.

The Sharman System of Wireless Telephony and Telegraphy. T. Thorne Baker. Information concerning the working of the system of A. W. Sharman. 1000 w. Nature—Oct. 26, 1911. No. 27665 A.

The Telefunken System of Wireless Telegraphy. Illustrated description of the "singing spark" system and the apparatus with which the stations are equipped. 3000 w. Elect'n, Lond—Nov. 10, 1911. Serial. 1st part. No. 28116 A.

The Telefunken Wireless Station at Nauen. Illustrated description giving details of the antenna and the plant now in use, with summary of results. 2000 w. Elect'n, Lond—Dec. 1, 1911. No. 28755 A.

Recent Wireless Telegraph Patents. W. H. Eccles. Diagrams and descriptions. 2000 w. Elect'n, Lond—Dec. 22, 1911. Serial. 1st part. No. 29456 A.

Wireless Telegraphy on the Atlantic Coast of the United States. James L. Charlton. An outline of the wireless-telegraph development on the Atlantic coast line. Also editorial. 3000 w. Elec Wld—Jan. 27, 1912. No. 30104.

The Work of the U. S. Naval Radio-Telegraphic Laboratory. L. W. Austin. Reviews the general nature of the work. 5000 w. Jour Am Soc of Nav Engrs—Feb., 1912. No. 31492 H.

Wireless Telegraphy at Cornell University. L. F. Fuller. Brief historical sketch of the station and a synopsis of an investigation of the "Receiving Characteristics of the Umbrella Type Aerial." Ills. 1800 w. Sib Jour of Engng—March, 1912. No. 32124 C.

Imperial Wireless Telegraph Service. Text of the agreement between the British Government and Marconi's Wireless Telegraph Co. for the establishment of an imperial scheme of wireless telegraphy. 6500 w. Elect'n, Lond—July 26, 1912. No. 35149 A.

The New Marconi Works at Chelmsford. Plan and description of works for the manufacture of the many devices used in connection with wireless telegraphy. 1500 w. Engr, Lond—June 28, 1912. No. 34338 A.

Design of a Radio-telegraph Station. Shunkichi Kimura. Detailed discussion of the design of a station for effecting reliable communication over a specified range. 3000 w. Elect'n, Lond—Oct. 18, 1912. Serial. 1st part. No. 37068 A.

The Opening Up of the Amazon District by Wireless Telegraphy Between Para and Lima. E. Reinhard. Explains conditions which make telegraph line construction especially difficult, and illustrates and describes the Telefunken system and the difficulties encountered in installing. Ills. 1200 w. Elect'n, Lond—Dec. 8, 1911. Serial. 1st part. No. 29037 A.

Printing Telegraphy. Illustrated description of a system devised by A. M. Howland for sending secret messages by wireless telegraphy. Ills. 700 w. Sci Am Sup—March 30, 1912. No. 31648.

The Goldschmidt High-Frequency Alternator for Wireless Telegraphy and Telephony. Detailed description. 1200 w. Elect'n, Lond—July 19, 1912. No. 34882 A.

Regulation of Radiotelegraphy. Robert A. Morton, Jr. Discusses the need of regulation, the bill now before the U. S. Senate, and the principal objections against it. 3500 w. Sci Am Sup—March 23. 1912. No. 31428.

Regulations of the London Wireless Conference. Gives a full transcript of the London convention and the final protocol, and an abstract of the regulations. 5500 w. Elec Wld—Sept. 28, 1912. No. 36413.

See also Telephone Repeaters, and Transmitters, under *Communication;* "Titanic," under MARINE AND NAVAL ENGINEERING; and Prospecting, under MINING AND METALLURGY, *Mining.*

Rates

Wire Message Rates. William W. Mulford. Brief discussion of the basis for telegraph and telephone rates. 1200 w. Cassier's Mag—May, 1912. No. 33029 B.

Rational Telephone Rates. Frank F. Fowle. Reviews the influences which have affected telephone rates, and the systems in use, giving cost analysis, etc. 4000 w. Elec Rev & W Elect'n—Dec. 9, 1911. Serial. 1st part. No. 28697.

Ship's Telegraph

A New Electrical Ship's Telegraph Apparatus. Illustrates and describes an apparatus, due to Carl Meyer, using alternating current. 1000 w. Elec Rev, Lond—Feb. 9, 1912. No. 30658 A.

Signalling

Electrical Methods of Intercommunication for Military Purposes. George O. Squier. Abstract of a paper read at joint meeting of the Elec. Sec. and the Phila. Sec. of the Am. Inst. of Elec. Engrs. Explains the work of the Signal Corps of the U S Army. Ills. 2500 w. Jour Fr Inst—Dec., 1911. No. 28788 D.

Modes of Accentuating Line Signals (Einrichtung zur Verschärfung der Streckensignale). L. Kohlfürst. Chiefly dealing with contact signalling. Diagrams. Serial. 1st part. 3300 w. Schweiz-Bau—Dec. 16, 1911. No. 29722 B.

See also same headings, under MARINE

AND NAVAL ENGINEERING; and RAILWAY ENGINEERING, *Conducting Transportation.*

Solar Radiation

The Disturbing Influence of Solar Radiation on the Wireless Transmission of Energy. Nikola Tesla. Presents new ideas in regard to the propagation of electrical waves through the air. 2000 w. Elec Rev & W Elect'n—July 6, 1912. No. 34299.

Submarine Cables

The Theory of the Submarine Telegraph Cable. H. W. Malcolm. A study of possible improvements in submarine cables in working speed, developing a method for obtaining arrival and sending curves by simple calculation, for any form of apparatus. 2000 w. Elect'n, Lond—March 8, 1912. Serial. 1st part. No. 31248 A.

Anglo-Belgian Submarine Telephone Cable with Pupin Loading Coils. Also editorial. Information concerning the cable between St. Margaret's, in England, and La Panne in Belgium, discussing the construction and limitations of such cables. 2200 w. Elec Wld—March 16, 1912. No. 31241.

A Method of Determining the Distance of a Partial Disconnection in a Submarine Cable. Charles E. Hay. Describes a method successfully applied. 500 w. Elec Rev, Lond—June 28, 1912. No. 34309 A.

The Semi-Bridge System for Duplexing Submarine Cables. J. Kajiura. Diagrams and explanation of the arrangement. 1200 w. Elect'n, Lond—July 5, 1912. No. 34462 A.

A Peculiar Fracture in a Submarine Cable. An account of fractures in a cable between Gutzlaff and Amoy, belonging to the Great Northern Telegraph Co. Ills. 1000 w. Elec Rev, Lond—July 19, 1912. No. 34597 A.

Submarine Power Cable Installation at Sacramento, Cal. J. Paulding Edwards. Illustrates and describes the method of laying and of making connections of a cable transmitting power across a river, and also to a draw span of a bridge. 2000 w. Elec Ry Jour—July 6, 1912. No. 34293.

Telautograph

The Telautograph and Its Uses. H. J. Woods. Short descriptive paper, with discussion. Ills. 3000 w. Pro St. Louis Ry Club—Jan. 12, 1912. No. 30499.

Telegraphy

The Various Systems of Multiple Telegraphy. W. A. J. O'Meara. Deals with the systems which, when working on a single line, enable communication to be utilized wholly in one direction, or partly in one and partly in the other direction. 3000 w. Elect'n, Lond—Oct. 27, 1911. No. 27720 A.

Will the Signal be Lengthened on Alternating-Current Telegraphy? Béla Gáti. Abbreviated translation from *Elektrotechnik und Maschinenbau.* Shows that lengthening is a peculiarity of direct current and does not occur in alternating current signals. 1200 w. Elect'n, Lond—April 12, 1912. No. 32254 A.

Trans-Atlantic Telegraphy. Charles Bright. Observations on the speech made in opposition to the Imperial Atlantic Cable at a recent meeting. 800 w. Elec Rev, Lond—April 5, 1912. No. 31907 A.

Railway Telegraph Superintendents. A report of the New York meeting, with abstracts of papers. 5500 w. Ry Age Gaz—June 14, 1912. No. 33712.

Military Telegraph Lines Using the Polarized Sounder as Receiving Instrument. George R. Guild. Describes some of the important phases of single impulse induced current circuits, and indicates the instruments which the writer has found best adapted to these circuits. Ills. 5500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34067 F.

The Practical Aspects of the Propagation of High-Frequency Electric Waves Along Wires. John Stone Stone. Discusses high-frequency multiplex telephony and telegraphy and the application to trunk lines. Ills. 8800 w. Jour Fr Inst—Oct., 1912. No. 37103 D.

See also Submarine Cables, and Telephony, under *Communication.*

Telephone Cables

Pupin or Krarup Cables (Pupin-oder Krarup-Kabel)? E. F. Petritsch. Comparison of the two systems of telephony with reference to lines of either system now installed. Ills. Serial. 1st part. 2800 w. Elektrotech u Maschinenbau—May 19, 1912. No. 33537 D.

The New Telephone Line from New York to Denver, the longest Pupin System (Die neue Telephonleitung New York-Denver, die längste Pupin-Leitung). R. Nowotny. Description of line and its relay system over 3,300 k.m. Diagrams. 3600 w. Elektrotech u Maschinenbau—Dec. 17, 1911. No. 29743 D.

Pupin Lines (Sur les Lignes Pupinisées). M. Cohen. A review of the theory of the Pupin system for long-distance telephony, and its utility for American purposes. Discussions on the Denver-New York system by M. M. Devaux-Charbonnel and H. Planchon. Ills. 20000 w. Bull Soc Int d'Electriciens—Feb., 1912. No. 31402 F.

Long Distance Cable Telephony. Its Explanation by Means of the Electron Theory (Die Kabel Telephonie auf Grosse Entfernungen. Ihre Erklärung mittels der Electronentheorie). Herr Kareis. Discussion on this theory a probable explanation. 3500 w. Electrotecknicker—June 25, 1912. No. 34514 D.

Long Distance Telephony (Die Telephonie auf grosse Entfernungen). E. F. Petritsch. Brief review of the history and growth of long distance or interurban telephony; the possibilities for far longer systems in the United States and improbabilities on the continent. Diagrams. Two parts, part one. 3500 w. Zeit d Oest Ing u Arch Ver—July 12, 1912. No. 35529 D.

Localizing Faults in Telephone Cables (Localiseeren van fouten in telefoonkabels). N. Koomans. Describes several schemes for locating disturbances along the line. Diagrams. 2600 w. De Ingenieur —Sept. 7, 1912. No. 36659 D.

Telephone Lines

The Overhead Plant of a Modern Telephone System. Explains the prohibitive cost of underground distribution for many places, and describes the improvements introduced in line construction. 3000 w. Can Engr—Aug. 29, 1912. Serial. 1st part. No. 35721.

Telephone Repeaters

Ionized Gas for Telephone Repeaters. C. D. Lindredge. Discusses the use of ionized gas devices in wireless telegraphy and as the repeater-transmitter in telephony. Ills. 1200 w. Tel Engr—Sept., 1912. No. 36955 C.

Telephony

The Invention of the Telephone. Alexander Graham Bell. Address at Boston, Nov. 2, 1911, before the telephone engineers, giving earliest facts never before published. 5000 w. Elec Rev & W Elect'n —Nov. 11, 1911. No. 27964.

The Telephone in the Operation of Power and Transmission Systems. S. R. Edwards. Shows the important part the telephone takes in the maintenance of service. 1800 w. Sib Jour of Engng—Dec., 1911. No. 30042 C.

Railway Telephony in the United States of America. H. Marchand. Brief description of the system used. 3000 w. Bul Int Ry Cong—Feb., 1912 (2d part). No. 30892 G.

Telephones on American Railways. Statistics from the report of the Interstate Commerce Commission of roads having a telephone mileage of 100 miles or more, with statements relating to their use. 2500 w. Ry Age Gaz—May 24, 1912. No. 33070.

Notes on a Telephone System Recently Built in San Francisco and Its Neighborhood. Samuel G. McMeen. The system described consists of a wire plant of submarine, underground, and aerial cables joined to 10 groups of automatic switching apparatus housed in ten buildings. Ills. Discussion. 6000 w. Jour W Soc of Engrs—Oct., 1911. No. 28245 D.

Calculations for 1000-Spark Frequency. Shunkichi Kimura. A mathematical study of high-pitch spark frequency and how to increase the spark potential. 2500 w. Elect'n, Lond—Jan. 26, 1912. No. 30298 A.

The Vibrations of Telephone Diaphragms. Charles F. Meyer and J. B. Whitehead. An account of work undertaken to obtain more accurate information concerning the way the diaphragms vibrate. Ills. 5500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34073 F.

Telephone Party-Lines (Gesplitste telefoonaansluitingen). C. L. van der Bilt. Description of the operation of the ordinary party-line system. Ills. 9500 w. De Ingenieur—June 1, 1912. No. 33586 D.

Automatic and Semi-Automatic Telephony in regard to Economy and Serviceability in Large Cities (I sistemi Telefonici automatici e semi-automatici sotto il riguardo della economia e della bontà nelle grandi citta). H. Milon. Description of the systems and their operation. Serial. 1st part. 2000 w. Industria—Dec. 24, 1911. No. 29815 D.

Telephone Systems in Italy (Per la sistemazione del servizio telefonico in Italia). Review of the progress and present state in telephony. Serial. 1st part. 6600 w. Monit Tecnico — Feb., 20, 1912. No. 3[illegible]421 D.

See also Submarine Cables, and Telegraphy, under *Communication*, and Wiring, under *Distribution*.

Telephotography

The Transmission of Photographs Over Telephone Wires. Illustrates and describes briefly recent improvements in Dr. Korn's method and results. 800 w. Sci Am—June 1, 1912. No. 33284.

See also Photo-Telegraphy, and Telautograph, under *Communication*.

Transmitters

A Direct Method for the Determination of the Radiation Efficiency, Earth Resistance and Radiation Resistance of a Wireless Transmitter. J. Erskine-Murray. Describes a method in which a small auxiliary antenna is used. 2000 w. Elect'n, Lond—July 12, 1912. No. 34708 A.

The Gardner-Ferguson Electrical Impulse Transmitter. Illustrated description of an instrument devised to obtain regular and incremental electrical impulses from any motion, and transmit them any distance. 900 w. Engng—Aug. 16, 1912. No. 35478 A.

DISTRIBUTION

Circuit Breakers

Degradation of Accumulative Energy. A. G. Collis. Abstract of a paper read before the S. Wales Inst. of Engrs. Intended as a sequel to a former paper on "Breaking High and Low Potential Circuits." Gives further oscillograph records of the effects of opening and closing various circuits. Also discussion. 4500 w. Elect'n Lond—Feb. 23, 1912. No. 31019 A.

The Requirements and Operation of Circuit Breakers. C. C. Badeau. Considers the conditions for which protection is required and the requirements of the devices used. 2000 w. So Elect'n—Sept., 1912. No. 35824.

Circuit Closing in Electric Lines (Der Einschaltvorgang bei elektrischen Leitungen). R. Rüdenberg. Mathematical discussion. Diagrams. 5200 w. Elektrotechnik u Maschinenbau—Feb. 25, 1912. No. 31373 D.

Recent Developments in the Art of Circuit-Interrupting Devices for High Voltages. Charles J. Hejda. Illustrated description of the construction and principle of operation of the latest type of S. & C. fuse. 1500 w. Elec Rev & W Elect'n—July 27, 1912. No. 34817.

The Development of Oil Circuit-Breakers. E. B. Merriam. Brief illustrated review. 2000 w. Gen Elec Rev—Sept., 1912. No. 35674 C.

Tests of Large High Voltage Oil Circuit Breakers. J. N. Mahoney. Information concerning noteworthy tests recently made, especially the tests of the Hydraulic Power Co., Niagara Falls, N. Y. Ills. 3500 w. Elec Jour—Sept., 1912. No. 36045.

Circuits

Determination of Load Centers of Circuit. M. C. Rice. An explanation of wiring formulae for computing constructor sizes for circuits. 800 w. Elec Wld—May 18, 1912. No. 32940.

Investigation and Care of Return Railway Circuits. E. E. Nelson. Read before the S.-W. Elec. & Gas Assn. Shows the necessity of first-class track bonding. 3000 w. Can Engr—May 2, 1912. No. 32630.

Conductor Sizes

Determination of the Size of Electric Conductors. Illustrates the application of principles by worked out examples. 1200 w. Mech Wld—Oct. 18, 1912. Serial. 1st part. No. 37074 A.

Conduits

Installing Conduit Services. George L. Forrest. Illustrates and describes work. 500 w. Elec Rev & W Elect'n—April 13, 1912. No. 31967.

See also Underground Systems, and wiring, under *Distribution.*

Construction

Notes on Electrical Construction. George J. Kichgasser. First of a series of articles aiming to cover every phase of construction encountered in industrial plants. The present article deals with circuits and wiring. 2500 w. Elec Rev & W Elect'n—Jan. 6, 1912. Serial. 1st part. No. 29496.

Service Connections. Illustrates and describes methods employed in a large city. 1500 w. Elec Rev & W Elect'n—Aug. 10, 1912. No. 35111.

The Construction of Distribution Systems for Outlying Districts and Small Plants. S. Bingham Hood. Useful hints for engineers. 10000 w. Can Elec News—Aug., 1912. No. 34920 C.

Current

Prevention of the Theft of Current. George L. Forest. Suggests practical methods of safeguarding. Diagrams. 1000 w. Elec Rev & W Elect'n—May 18, 1912. No. 32952.

Current Rectifiers

See Alternating Current, under *Electro-Physics*, and Locomotives, under STREET AND ELECTRIC RAILWAYS.

D. C. Systems

Direct Current Systems of Distribution for Lighting Service. J. R. Werth. Presents diagrams showing the original arrangement and the modern method, compares the different types of apparatus used in 3-wire Edison lighting systems. 3500 w. Gen Elec Rev—Sept., 1912. No. 35676 C.

Frequency Changers

Frequency Changers. C. Turnbull. Discusses the various difficulties underlying the use of frequency changers for coupling together net works of different frequencies. 2000 w. Elect'n, Lond—Sept. 27, 1912. No. 36719 A.

Phasing

Phasing Out Polyphase Circuits. Harold W. Brown and S. S. Neu. Gives directions for phasing out. 3000 w. Elec Jour—May, 1912. No. 33211.

Regulators

Some Stages in the Development of Generator Field Regulators. George J. Kirchgasser. Reviews the development of regulating devices. Ills. 2000 w. So Elect'n—May, 1912. No. 32639.

Relays

Characteristics of Protective Relays. E. M. Hewlett. Describes the general characteristics of protective relays necessary for the automatic and selective action of circuit breaking and switching devices connected to electrical distributing systems. 1800 w. Pro Am Inst of Elec Engrs—March, 1912. No. 31583 F.

Rural Distribution

The Supply of Energy for Ten Towns from One Station at Greenville, Ohio. D. L. Gaskill. An account of experiences in establishing a large distribution system in a rural district. 2500 w. Elec Wld—May 4, 1912. No. 32614.

Supply Systems

The Construction of Distribution Systems for Outlying Systems and Smaller Plants. S. Bingham Hood. Abstract of paper read before the Can. Elec. Assn. General discussion, with analysis of pole costs, pole fittings, and related matters. 4500 w. Can Engr—July 11, 1912. Serial. 1st part. No. 34485.

Switches

A Flame-Tight Switch and Fuse Box. Illustrated description of a special gate-end switch and fuse box suitable for rough conditions. 1000 w. Ir & Coal Trds Rev —April 5, 1912. No. 32107 A.

Notes on the Theory of Switching (Beiträge zur Schaltungstheorie). Robert Edler. Reviews the several theories with examples. Diagrams. Serial. 1st part. 1900 w. Elek Rund—July 11, 1912. No. 35561 D.

The Resistance of Contacts (Der Widerstand von Kontakten). Ludwig Binder. A study of the losses in power due to increased resistance in the current passing through thin strata of air between contact points. Ills. 5200 w. Elek u Masch —Sept. 22, 1912. No. 36650 D.

Tariffs

Residence Tariffs. A. H. Seabrook. Discusses the cost of supplying residence consumers and considers the various tariffs at present in use. 12500 w. Inst of Elec Engrs—Dec. 14, 1911. No. 29215 N.

Trunk Lines

Electric Trunk Line Service (Ueber elektrische Vollbahnbetriebe). E. Scheichl. Description of four such lines in Italy. Ills. Serial. 1st part. 8000 w. Zeit d Oest Ing u Arch Ver—Oct. 20, 1911. No. 28489 D.

Underground Systems

Conduit Considerations for Underground Distribution Systems. William D. Ligon. Illustrated review of developments in underground distribution and engineering features of tile and fibre conduit systems. 1500 w. So Elect'n—April, 1912. No. 31812.

Alternating-Current Systems of Underground Distribution. S. J. Lisberger and C. J. Wilson. Briefly compares direct and alternating current systems and describes the latter. 3000 w. Pro Am Inst of Elec Engrs—April, 1912. No. 32427 F.

An Underground System and a Few Developments. S. B. Clark. Describes the underground system at Portland, Ore., discussing features of underground work. 2200 w. Pro Am Inst of Elec Engrs—April, 1912. No. 32426 F.

Discussion on "Alternating-Current Systems of Underground Distribution." S. J. Lisberger and C. J. Wilson, and "An Underground System and a Few Developments." S. B. Clark. Discussion of the two papers at Portland, Ore., April 18, 1912. 3800 w. Pro Am Inst of Elec Engrs—Oct., 1912. No. 37140 F.

Connections from Underground to Overhead Lines of High Voltage (Les Réseaux Souterrains à Haute Tension Reliés Métaliquement aux Lignes Aériennes). J. Grosselin. A discussion of the voltage loss at the point of junction. 3200 w. Ills. L'Électricien—Oct. 21, 1911. No. 28413 D.

Some Interesting Underground Electrical Work. Illustrated description of a high-tension installation. 1000 w. Elec Rev & W Elect'n—Aug. 17, 1912. No. 35266.

Wiring

Conduit Versus Open Wiring for Places Exposed to Dampness or Corrosive Vapors. F. G. Waldenfels. Describes kinds of wiring tried, explaining objections to various types of construction. Ills. 1500 w. Elec Rev & W Elect'n—May 11, 1912. No. 32822.

Conduit versus Openwork in Places Subject to Moisture, Corrosive Fumes, Steam, Etc. F. G. Waldenfels. Describes different installations in detail, calling attention to their defects, and recommending improvements, encouraging the use of conduits. Ills. 2500 w. Elec Wld—Oct. 12, 1912. Serial. 1st part. No. 36794.

Inspection of Electric Wiring in Sparsely Settled Districts. W. J. Canada. The importance of good installations is shown and rules are given to supplement the National Electrical Code. 2000 w. Elec Wld—April 20, 1912. No. 32226.

Concerning Safe Wiring. Waldemar Michaelsen. Read before the Neb. Elec. Assn. Suggestions. 1800 w. Elec Rev & W Elect'n—April 27, 1912. No. 32402.

Multiple-Series and Series-Multiple Wiring. Z. C. Adams. Discusses the proper definitions for these terms. 1000 w. Elec Rev & W Elect'n—Aug. 17, 1912. No. 35265.

Engineering Considerations in Installing Residence Electrical Equipment. Gives practical data and suggestions for architects, electrical contractors, and central station engineers. 4000 w. So Elect'n—April, 1912. No. 31813.

Some Interesting Details of the Electric Wiring in a Large Office Building. F. G. Waldenfels. Illustrates and describes details introduced in a 21-story Chicago building. 2500 w. Elec Rev & W Elect'n—March 23, 1912. No. 31500.

The Wiring of Large Buildings for Telephone Service. Frederick L. Rhodes. Illustrates and describes methods that have proved satisfactory. Ills. 6000 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34858 F.

Some Hazardous Wiring and How It Was Improved. H. G. Wilson. An account of unsafe wiring in wooden grain elevators, and the changes made. 1200 w. Elec Rev & W Elect'n—Jan. 6, 1912. No. 29497.

Some Unusual Construction in Open Wiring. H. G. Wilson. Brief illustrated description of three deviations from usual practice. 500 w. Elec Rev & W Elect'n—June 29, 1912. No. 34141.

Wiring Old Houses. Terrell Croft. Begins an account of a business campaign in Pittsburgh and vicinity. 2000 w. Elec Wld—July 13, 1912. Serial. 1st part. No. 34443.

Wiring in Cold Storage Rooms. W. J. Canada. Calls attention to precautions necessary in wiring such plants. 800 w. Elec Wld—July 6, 1912. No. 34287.

Wiring for Electric Hoists. Illustrated explanation of control circuits. 1500 w. Elec Rev & W Elect'n—July 27, 1912. No. 34816.

Wiring for Power and Light in Printing Offices. Illustrates and describes interesting installations. 2200 w. Elec Rev & W Elect'n—July 13, 1912. No. 34418.

Proposed Legislation by the State Commission Concerning Electric Wiring (Mededeelingen betrekkelijk het Ontwerp Electriciteitswet der Staatscommissie voor de Electrische Geleidingen). L. M. Barnet Lyon. Paper read before the Electrotechnic Society and general discussion. 9000 w. De Ingenieur—March 23, 1912. No. 32073 D.

Wiring Prices

Standardized Interior Wiring Prices. H. L. Parker. Explains the Baltimore plan of computing house-wiring costs on a combined basis of number of outlets and number of lamps or sockets. 3000 w Elec Wld—March 9, 1912. No. 31118.

DYNAMOS AND MOTORS

A. C. Generators

Parallel Operation of Compound-Wound Generators. C. I. Young. Discusses the factors to be taken into account for parallel operation. 4000 w. Elec Jour—Nov., 1911 No. 28318.

Excitation of Alternating-Current Generators. D. B. Rushmore. Considers only the excitation of alternating-current synchronous generators. Ills. 8500 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34866 F.

The Regulation of Alternating-Current Generators and Comparison of the Methods Used in Calculating It. Frank J. Kenny. 1700 w. Elec Rev & W Elect'n—Nov. 25, 1911. No. 28298.

Resistance Drop in A. C. Circuits. (Zur Frage der Verluste bei drehender und wechselnder Ummagnetisierung in Dynamoankern). G. Vallauri. Especially considering the loss by alteration of the magnetic force through hysteresis and eddy-currents. Serial. 1st part. 4800 w. Elektrotech u Maschinenbau—Oct 1, 1911. No. 28434 D.

A. C. Motors

Alternating-Current Motors; Their Applicability and Care. F. McNeill. Suggestions and helpful explanations concerning their use. 1500 w. Elec Rev & W Elect'n—Aug. 31, 1912. No. 35679.

The Automatic Control of Electric Motors. Describes systems of control, illustrating starters and regulators used. 2500 w. Engr, Lond—Nov. 17, 1911. No. 28363 A.

Large Alternating Current Motors for Variable Speed Service. N. Shuttleworth. Abstract of a paper read before the Rugby Engng. Soc. Describes the Lahmeyer System and commutator motors. 2000 w. Elec Engr, Lond—Dec. 22, 1911. No. 29447 A.

Starting Devices for Alternating-Current Motors. William E. Kampf. Deals with methods employed in minimizing the starting current and voltage fluctuation in the supply system. 1800 w. Elec Wld—Oct. 26, 1912. No. 37045.

Discussion on "Self-Starting Synchronous Motors." Discussion on paper by Carl J. Fechheimer, at Pittsburgh, Pa., April 25, 1912. 8000 w. Pro Am Inst of Elec Engrs. Oct., 1912. No. 37138 F.

The Operation and Testing of Polyphase Synchronous Motors. J. W. Rogers. Discusses principles of operation and methods of testing. 2500 w. Cassier's Mag—Sept., 1912. No. 36693 B.

Oerlikon Three-Phase Variable-Speed Cascade-Connected Motor Set Driving Mine Fans. G. Wuthrich. Illustrated description of these motors, with curve sheet, showing current, efficiency and power factor at different speeds. 1500 w. Ir & Coal Trds Rev—Oct. 4, 1912. No. 36933 A.

Excitation by Synchronous Alternating Currents (Die Erregung mit synchronem Wechselstrom). R. Moser. A study of the necessary arrangement of the commutator. Serial. 1st part. Ills. 4800 w. Elektrotech u Maschinenbau—Oct. 8, 1911. No. 28435 D.

Free Magnetic Energy Between Connected Polyphase Systems (Freie magnetische Energie zwischen verketteten Mehrphasensystemen). L. Dreyfus. A mathematical discussion. 4000 w. Elektrotech u Maschinenbau—Oct. 29, 1911. No. 28447 D.

Phase Balancing and Motor Feeding in Three-Phase Motors (Note sur l'Équilibrage des Phases et l'Alimentation des Moteurs dans les Reseaux triphase). F. Scoumanne. Discussion of voltage drops. 12000 w. Rev d'Électricité—Oct., 1911. No. 28505 N.

Effective Braking of A. C. Commutator Motors With Series Characteristics (Ueber die Nutzbremsung von Wechselstrom-Kommutatormotoren mit serien-charakteristik). F. Niethammer and E. Siegel. Results of practical experiments from previous theories. Ills. Serial. 1st part. 2800 w. Elek u Masch—Sept. 1, 1912. No. 36645 D.

Ventilator Driving with Three-Phase Cascade Motors (Ventilatorantrieb mit Drehstrom-Kaskadenmotor). Herr Zederbohm. Describes the motors for this work. Ills. 2000 w. Elek Kraft u Bahnen—July 24, 1912. No. 35560 D.

Alternators

The Transient Reactions of Alternators. William A. Durgin and R. H. Whitehead. Investigates the influence of a characteristic of alternators known as the transient impedance. 4000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34065 F.

Armatures

Ventilation of Armatures. W. H. F. Murdoch. A mathematical study. 600 w. Elec Rev, Lond—Nov. 3, 1911. No. 28015 A.

Direct Current Armature Winding. J. H. Garrett. Deals with the problems of winding and testing. 2500 w. So Elect'n —Dec., 1911. No. 28776.

Locating Defects in Direct Current Armatures. Gordon Fox. Illustrates and describes a simple device used to locate "shorts," opens, grounds, or cross-connections. 1000 w. Power—Jan. 16, 1912. No. 29632.

Calculation of the Reluctance of Armature Teeth. David Robertson. Gives a method of calculating the reluctance of the teeth of a slotted armature for those cases in which the flux density is so high that the flux in the slots cannot be neglected. 500 w. Elect'n, Lond—July 26, 1912. No. 35147 A.

Braking

A New Self-Adjusting Prony Brake. J. Dennis Coales. Line drawing and description of a new type of prony brake. 1200 w. Elect'n, Lond—July 19, 1912. No. 34883 A.

The Theory of Dynamic Braking in Industrial Motor Applications. R. H. McLain. Explains the theory and uses of this power absorption and the advantages obtainable. 2000 w. Gen Elec Rev—May, 1912. No. 33005 C.

Electric Braking of Induction Motors. H. C. Specht. Discusses electric braking by alternating current and by direct current, and when each is preferable. 2500 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33243 F.

Electric Braking of Tri-Phase Series Commutator Motors (Ueber elektrische Bremsung von Drehstromserien-Kollektormotoren). Kl. Schenfer. Mathematical discussion deducing curves. Diagrams. 9000 w. Elek u Masch—June 30, 1912. No. 34534 D.

See also Control, under *Dynamos and Motors.*

Brushes

Brushes. W. R. Whitney. Describes experiments made with the view of assisting the improvement in the qualities of motor and generator brushes, particularly of the carbon type. Ills. 3000 w. Jour Fr Inst—March, 1912. No. 31570 D.

Setting Motor Brushes. J. S. Kinney. Notes on methods of setting to obtain satisfactory operation. Diagrams. 1500 w. Power—July 23, 1912. No. 34701.

Brushes. W. C. Kalb. An analysis of the requirements of the satisfactory brush for electric railways. 3500 w. Elec Ry Jour—Sept. 28, 1912. No. 36408.

Commutation

Commutation. F. W. Carter. A discussion of various theories relating to commutation and their practical application. 2500 w. Elec Wld—June 29, 1912. No. 34143.

Discussion on "A Theory of Commutation and Its Application to Interpole Machines," New York, Oct. 13, 1911. Discusses B. G. Lamme's paper. 10500 w. Pro Am Inst of Elec Engrs—Dec., 1911. No. 28927 F.

An Indicating Coil for Applying the Oscillograph to the Study of Commutation. David Robertson. Abstract from the Jour. of the I. E. E. Explains a way in which the oscillograph can be applied to show the internal currents in an armature without cutting one of the main coils. 1000 w. Elect'n, Lond—June 7, 1912. No. 33774 A.

Commutation (Ueber Kommutierung). Dr. Niethammer. Discusses mathematically the E. M. F. in D. C. Motors with and without interpoles, and also the flash-over in D. C. motors. Diagrams. 6400 w. Elektrotech u Maschinenbau—Feb. 11, 1912. No. 31372 D.

The Commutation of D. C. Motors (Die Kommutierung bei Gleichstrommaschinen). W. Weller. Mathematical discussion with the determination of formulae. Diagrams. 3600 w. Elektrotech u Maschinenbau—Apr. 14, 1912. No. 32735 D.

Commutation Current Curves from Single Phase Collector Motors (Kommutationsstromkurven bei Einphasenkollektormotoren). K. Schenfer. Mathematical discussion. 3600 w. Elektrotech u Maschinenbau—Dec. 31, 1911. No. 29746 D.

Commutation Curves from Poly-phase Commutator-Motors (Kommutierungskurven bei Mehrphasenkommutatormotoren). Klaudius Schenfer. Calculations and experiments for the determination of such curves. Diagrams. 3200 w. Elektrotech u Maschinenbau—Apr. 28, 1912. No. 32736 D.

The Circle Diagram of the Three-Phase Series Commutators (Das Kreisdiagramm des Drehstromkollektor-Serienmotors). L. Dreyfus and F. Hillebrand. Mathematical discussion on the circle diagram under several conditions. Diagrams. Serial. 1st part. 6000 w. Elektrotech u Maschinenbau—May 12, 1912. No. 33535 D.

Commutators

Single-Phase Commutator Motors. R. E. Hellmund and E. W. P. Smith. Presents facts regarding their design, showing the present tendency. Ills. 3000 w. Elec Jour—Feb., 1912. No. 30843.

Single-Phase Commutator Motors. R. E. Hellmund and E. W. P. Smith. Discusses design details in connection with motors of this type, especially motors with "preventive" leads in the armature winding. 2500 w. Elec Jour—April, 1912. No. 32183.

Single-Phase Commutator Motors. R. E. Hellmund and E. W. P. Smith. Discusses the use of commutating poles for the purpose of inducing a voltage equal and opposite to the short circuit voltage. 2500 w. Elec Jour—May, 1912. No. 33209.

The Single Phase Commutator Motor. John A. Randolph. Explains principles involved and methods of design most commonly employed. Diagrams. 2000 w. Power—Oct. 1, 1912. No. 36427.

Care and Operation of Commutators. W. A. Dick. Outlines some difficulties and indicates how improvements can be made. Ills. 4500 w. Elec Jour—May, 1912. No. 33206.

Commutator Motors (Moteurs à Collecteur). R. Legouëz. A study of types of polyphase motors with diagrams. 3600 w. L'Électricien—Oct. 14, 1911. No. 28412 D.

The Theory of Current Reversal (Zur Theorie der Stromwendung). K. Pichelmayer. Mathematical discussion. 2400 w. Elek u Masch—Jan. 7, 1912. No. 30519 D.

The Theory of Current Reversal (Zur Theorie der Stromwendung). F. Niethammer. Discussing previous paper by Prof. Pichelmayer. 1600 w. Elek u Masch—Jan. 21, 1912. No. 30523 D.

Flashing-Over in Commutator Machines. Abstract of a paper by W. W. Firth read before the Newcastle Sec. of the Inst. of Elec. Engrs. and of the discussion. Explain causes. 2000 w. Ir & Coal Trds Rev—April 5, 1912. No. 32108 A.

Compensated Three-phase Commutators with Series Characteristics (Der Kompensierte Drehfeld-Kommutatormotor mit Seriencharakteristik). F. Niethammer and E. Siegel. Mathematical description of the action of the Scherbius series-motor. Serial. Part I. 3200 w. Elektrotech u Maschinenbau—Nov. 5, 1911. No. 28842 D.

Compensated Three-Phase Shunt Commutators (Kompensierte Drehfeld-Kommutatormaschinen mit Nebenschlusscharakteristik). F. Niethammer and E.

Siegel. A diagrammatic study of the Scherbius shunt-motor. 5600 w. Elektrotech u Maschinenbau—Oct. 22, 1911. No. 28436 D.

Progress in the Commutation of Single-Phase Commutator Motors (Fortschritte in der Commutierung von Einphasencommutatormotoren). W. Wolf. Presents recent practice. Ills. Serial. 1st part. 2000 w. Elek Rundschau—April 11, 1912. No. 32319 D.

Starting Conditions of Single-Phase Commutator Motors with Series-Wound Characteristics—Railway Motors (Anlaufverhältnisse der Einphasen-Kommutatormotoren mit Reihenschlusscharakteristik-Bahnmotoren). F. Niethammer and E. Siegel. Mathematical discussion. Serial. 1st part. 7200 w. Elek Kraft u Bahnen—Apr. 14, 1912. No. 32741 D.

Self-Exciting and Braking of Series Wound Commutators of One or More Phases (Ueber Selbsterregung und Nutzbremsung von Reibenschluss-Kommutatormaschinen für Ein und Mehrphasen). Alfred Fraenckel. Mathematical discussion on the application of such generators in railway service. Ills. 6400 w. Elektrotech u Masch—Aug. 18, 1912. No. 36140 D.

Three-Phase Commutator Motors (I motori trifasi a collettore). Emilio Biffi. Discusses the various principles of three-phase motors and describes the Krämer, Scherbius and Leonard systems. Ills. 10800 w. Monit Tecnico—Aug. 30, 1912. No. 36213 E.

The Siemens-Schuckert Three-Phase Commutator Motors. M. Schenkel. Read before the Elektrotechnischer Verein. (Abstract.) A general description of the theory, construction, and method of working. Diagrams. 1200 w. Elect'n, Lond—Oct. 4, 1912. Serial. 1st part. No. 36832 A.

Compensators

Line Drop Compensators. E. F. Gehrkens. Explains its function in an a. c. supply system. 3000 w. Gen Elec Rev—March, 1912. No. 30766 C.

Condensers

Synchronous Condensers. C. T. Mosman. Explains theoretically how synchronous motors may be used to control the power factor by adding wattless current to the circuit. 3000 w. Gen Elec Rev—July, 1912. No. 34226 C.

Control

Electric Controlling Devices. G. J. Kirchgasser. Explains the action of motors and illustrates and describes devices for starting and regulating them in practice. 3500 w. Mach, N Y—July, 1912. No. 34167 C.

Automatic Motor Starters and Controllers for Direct Current Motors. H. L. Beach. Explains the operation of some recent automatic starters. 2500 w. Elec Jour—Aug., 1912. No. 35362.

Automatic Motor Starters and Controllers for Direct-Current Motors. H. L. Beach. Considers motor applications where the driven load has small inertia and small starting friction. Ills. 1700 w. Elec Jour—Sept., 1912. No. 36050.

Discussion on "Automatic Motor Control for Direct-Current Motors," Chicago, June 28, 1911. The paper by Arthur C. Eastwood is discussed. Ills. 2500 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28198 F.

The Nature and Extent of Recent Industrial Control Developments. C. D. Knight. Outlines briefly the two principal types of time limit control, and discusses the advance in automatic control. 1500 w. Gen Elec Rev—May, 1912. No. 33001 C.

The Control of Electrically-Driven Rotory Newspaper Presses. Carl F. Scott. Explains the method of operation, and the various steps in the development of the electric drive, and gives an illustrated description of the completely automatic two-motor equipment in such work. 2200 w. Gen Elec Rev—May, 1912. No. 33004 C.

Advantages of Automatic Control in Steel Plant Operation. Stewart C. Coey. Explains the reasons for automatic control as opposed to manual control, and reports tests recently made at Youngstown, in the new developments in automatic control brought about by the use of the series-wound accelerating switch. 2000 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33240 F.

The Selection of Control Apparatus for Steel Plants. M. A. Whiting. Gives a general classification of motor services, and discusses the relative advantages and suitable fields for different equipments. 4000 w. Gen Elec Rev—May, 1912. No. 33002 C.

The Control of Electric Motors on Ships. C. L. Perry. Illustrates and describes some of the equipment used in U. S. naval vessels for controlling motors. 2000 w. Gen Elec Rev—May, 1912. No. 33007 C.

Control for Railway Motors. Describes forms of control apparatus used to start and to regulate the speed of cars. Ills. 2000 w. Ry & Loc Engng—May, 1912. No. 32533 C.

D. C. Generators

Rewinding a Direct Current Generator. R. H. Fenkhausen. Describes a rather unusual problem of rewinding. Ills. 1700 w. Power—No. 14, 1911. No. 27995.

Three-Wire Machines (Dreileitermaschinen). M. Vidmar. A mathematical discussion especially concerning three-phase generators. 2600 w. Elektrotech u Maschinenbau—Dec. 3, 1911. No. 29740 D.

The Three-Wire Direct-Current Generator. William V. Merowitz. Describes a self-contained machine for operating three-wire systems. 1200 w. Elec Wld—April 13, 1912. No. 31964.

Three-Wire Direct-Current Generators. A. M. Bennett. Explains the advantages of the three-wire system, and describes types of generators. Diagrams. 2500 w. Power—Oct. 8, 1912. No. 36705.

See also Generators, Turbo-Generators and Voltage Regulation, under *Dynamos and Motors.*

D. C. Motors

Substation Apparatus for the Generation of Direct Current. H. F. T. Erben. Discusses recent improvements in the design and construction of d. c. substation machinery. Ills. 4500 w. Gen Elec Rev —June, 1912. No. 33377 C.

Direct-Current Machines; Installation and Operation. George E. Edwards. Suggestions from the standpoint of practical operation. 4000 w. Min & Engng Wld—July 27, 1912. No. 34872.

D. C. Motors without Commutators (Die kommutatorlose Gleichstrommaschine). M. Seidner. A discussion as to the possibility of such a motor. 4800 w. Elektrotech u Maschienenbau — Oct. 29,1911. No. 28448 D.

Continuous-Current Motors with Commutating Poles and Cast-Iron Magnets. J. W. Burleigh. Describes the technical details of a machine, pointing out some interesting effects. 1500 w. Elec Rev, Lond—Jan. 5, 1912. No. 29656 A.

Adjustable-Speed Motors. Alexander Dawes DuBois. Discusses the principles, types and characteristics of direct-current motors for industrial service. 4400 w. Elec Wld—May 18, 1912. Serial. 1st part. No. 32938.

See also Speed, under *Dynamos and Motors.*

Fault Location

Diagnosis of Faults in Electrical Machinery. Remedies to Apply (Diagnostic des Défauts des Machines électriques. Remèdes à appliquer). L. L'Hoest. A review of methods for fault location, and suggestions for various types of machinery. Ills. 8000 w. Soc Belge des Elec—Mar., 1912. No. 32748 E.

Field Coils

The Calculation of Shunt Field Coils. F. T. Chapman. Gives a method of calculating the winding of the field coils when it is necessary to make use of two different sizes of wire to obtain the required result. 800 w. Elect'n, Lond—Dec. 15, 1911. No. 29220 A.

Flux

Air Gap Flux Distribution in Direct-Current Machines. Charles R. Moore. Describes experiments and discusses method developed by means of which the full load flux distribution of a d. c. machine may be predetermined. Ills. 4000 w. Pro Am Inst of Elec Engrs—March, 1912. No. 31578 F.

Gas Dynamos

Vibration in Parallel Driven Gas Dynamos (Freie Schwingungen von Gasdynamos im Parallelbetrieb). U. O. Schumann. Mathematical discussion. 3200 w. Elek u Masch—Aug. 11, 1912. No. 36139 D.

See also Power-Stations, under *Generating Stations,* and Gas Power-Plants, under MECHANICAL ENGINEERING, *Combustion Motors.*

Generators

The Squirrel-Cage Induction Generator. Describes its attributes and discusses the correct economic field for such machines. Ills. 5500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34074 F.

Some Features of Squirrel-Cage Motor Installation. George J. Kirchgasser. Outlines troubles caused by improper applications. Ills. 3000 w. Elec Rev & W Elect'n—May 25, 1912. No. 33086.

Some Experiences with a Unipolar Generator. Editorial on a machine described by B. G. Lamme in a paper before the Am. Inst. of Elec. Engrs. Ills. 2000 w. Engng—July 19, 1912. No. 34896 A.

Notes on the Design of Water-Wheel Driven Generators. H. G. Reist. Illustrates and describes salient features. 1200 w. Gen Elec Rev—June, 1912. No. 33378 C.

Development of a Successful Direct-Current 2000-KW. Unipolar Generator. B. G. Lammne. A record of engineering experiences, and difficulties overcome, in the development of a large unipolar machine. Ills. 9000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34070 F.

Electrical and Mechan'cal Characteristics of the Modern Generator (Caractéristiques Électriques et Mécaniques des Génératrices Électriques Modernes). Dr. Hans Behm-Eschnuburg. A résumé of modern types, construction and properties. 3500 w. L'Électricien—Oct. 7, 1911. No. 28410 D.

Heating

Heat Transmission in Cross-Currents (Der Wärmeübergang im Kreuzstrom). Wm. Nusselt. Mathematical discussion with diagrams. 2300 w. Zeit des Ver Deutscher Ing—Dec. 2, 1911. No. 29760 D.

Induction Motors

Single-Phase Induction Motors. W. J. Branson. Aims to develop a complete vector analysis of single-phase induction motor performance as the basis for an accurate circle diagram applicable to motors of even the smallest commercial sizes. 4500 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34865 F.

Review of Graphical and Analytical Methods for Predetermining Operating Characteristics of Induction Motors. C. R. Moore. Compares various methods. Ills. 3500 w. Gen Elec Rev—Aug., 1912. No. 34951 C.

The Heyland Diagram for Induction Motors and Reverse Current Operation. H. J. S. Heather. Remarks on the application of the Heyland diagram to the solving of such problems. 2500 w. Elect'n, Lond—Oct. 27, 1911. No. 27722 A.

Induction Motor Design Constants. A Miller Gray. Gives a simplified algebraic expression of theoretical relations and empirical constants applicable in designing standard induction motors. 2500 w. Elec Wld—Dec. 30, 1911. No. 29244.

Practical Notes on Induction Motors. John S. Leese. Discusses their installation and maintenance. 3500 w. Elec Engr, Lond—Jan. 26, 1912. No. 30294 A.

Accelerating Characteristics of an Induction Motor. E. R. Shepard. Discusses methods employed in an attempt to determine the relation between speed and time while accelerating, and other matters of interest. 1200 w. Elec Wld—April 27, 1912. No. 32456.

The Hysteresis Torque of Induction Machines. Dr. Hans Riddervold. Explanation of its effect and measurement. 1000 w. Elec Wld—March 30, 1912. No. 31706.

The Commercial Testing of Three-Phase Induction Motors. A. J. Makower and P. A. Mossay. Suggests that a standard method of testing and calculating should be adopted to avoid variations in results. 3000 w. Elect'n, Lond—April 19, 1912. Serial. 1st part. No. 32492 A.

The Design of Induction Motor Shafts to Resist Deflection. Bradley T. McCormick. Gives formulae and illustrates their application. Ills. 1000 w. Can Engr—June 20, 1912. No. 33907.

Discussion on "Wave Shape of Currents in an Individual Rotor Conductor of a Single-Phase Induction Motor." Chicago, June 30, 1911. Discusses the paper by H. Weichsel. 1500 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28209 F.

Note on the Use of Induction Motors for Driving Winding Engines. H. J. S. Heather. Discusses their safety, and shows that the automatic cutting off of current can rarely do any good, and may do harm. 1500 w. Elect'n, Lond—Nov. 10, 1911. No. 28117 A.

Induction Motors in Machine Shops. S. R. Stone. Considers their adaptability, and factors influencing the selection of induction motors in the machine shop. Ills. 2000 w. Am Mach—Sept. 5, 1912. No. 35780.

A Simple Formula for Overloads in Three-Phase Induction Motors (Eine einfache Formel für die Ueberlastbarkeit des Drehstrominduktionsmotors). M. Vidmar. Solution effected by means of circle diagram. 2500 w. Elek u Masch—Jan. 28, 1912. No. 30526 D.

Equalizer Reaction in Symmetrical Multi-Phase Motors (Ausgleichsvorgänge in der symmetrischen mehrphasenmaschine). L. Dreyfus. Mathematical discussion. Serial. 1st part. 5800 w. Elek u Masch—Jan. 14, 1912. No. 30521 D.

Cascade Arrangement of Induction Motors and Tri-Phase Commutators with Series Characteristics (Kaskadenschaltung von Induktionsmotoren und Drehfeld-Kommutatormotoren mit Seriencharakteristik). Ernst Siegel. Applications of such arrangement in rolling mills, pumping stations, etc. Ills. Serial. 1st part. 5200 w. Elek u Masch—July 7, 1912. No. 35551 D.

See also Electrification, under RAILWAY ENGINEERING, *Motive Power and Equipment.*

Insulation

The Determination of Insulation Conditions in Three-Phase Plants (Ueber die Bestimmung der Isolationswiderstände bei Drehstromanlagen). Th. Pöschl. Mathematical Discussion. 1500 w. Elektrotech u Maschinenbau—Nov. 26, 1911. No. 28886 D.

The Measurement of Insulation in Three-Phase Plants (Zur Isolationsmessung bei Drehstromanlagen). A. v. Ettingshausen. Mathematical discussion. 1000 w. Elektrotech u Maschinenbau—Nov. 26, 1911. No. 28885 D.

See also same heading, under *Transmission,* and Gas Engines, under MECHANICAL ENGINEERING, *Combustion Motors.*

Interpoles

The Leakage Coefficients of Interpoles.

L. A. Doggett. Mathematical derivation of an expression for the leakage coefficient V, and its approximate range. 500 w. Elect'n, Lond—Aug. 23, 1912. No. 35743 A.

Operation of Interpole Motors. Gordon Fox. Shows how the interpoles can affect the speed regulation of a motor. Ills. 1200 w. Power—Dec. 12, 1911. No. 28750.

Leakage

Practical Determination of Leakage, Especially in A. C. Collector Motors (Praktische Streuungsberechnung, insbesondere bei Wechselstrom-Kollektormotoren). M. Schenkel. Gives tables and formulae for the purpose. Serial. 1st part. 3200 w. Elektroech u Maschinenbau—Dec. 10, 1911. No. 29741 D.

Experimental Determination of the Leakage Factors in Transformers and Three-Phase Induction Motors (Die experimentelle Bestimmung des Streufaktors von Transformatoren und Drehstrommotoren). Dr. G. Benischke. Presenting formulæ for these determinations. Diagrams. 1600 w. Elek Kraft u Bahnen—Feb. 14, 1912. No. 31367 D.

Magnetic Centering

Magnetic Centering of Dynamo-Electric Machinery. Frederick William Carter. Develops methods for calculating the forces resisting axial displacement of the rotating member, and indicates the conditions which favor strong centering. 800 w. Inst of Civ Engrs, No. 3955—May, 1912. No. 33165 N.

Mill Motors

Direct-Current and Alternating-Current Mill Motors for Auxiliary Drives. Brent Wiley. Considers the principal features recommended in the design of a motor for mill and similar work, illustrating and describing types and their proper applications. 3000 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33241 F.

Motor Starters

Motor Starters for Mining Work. A. P. Drake. Part I. deals with continuous-current starters, and Part II. with alternating-current starters. Ills. 3500 w. Ir & Coal Trds Rev—Feb. 23, 1912. No. 31049 A.

Operation

Operating Notes on Relays, Contactors and Other Basic Automatic Devices. W. C. Yates. Explains the function of some of these devices. Ills. 1800 w. Gen Elec Rev—May, 1912. No. 33006 C.

Phase Advancers

On Phase Advancers for Non-Synchronous Machines. Gisbert Kapp. From *Jour. Inst. of Elec. Engrs.* Refers to Leblanc's method of attaining this end and considers the theory of this method. Describes a vibrator devised by the author for injecting this E. M. F. 4500 w. Elect'n, Lond—May 17, 1912. Serial. 1st part. No. 33264 A.

Prime Movers

Weight Efficiency of Electric Motors and of Prime Movers. W. B. Hird. Read before the Inst. of Elec. Engrs. Considers the relation of weight to output. 3000 w. Mech Engr—April 12, 1912. No. 32268 A.

The Size and Cost of Electric Generators in Relation to the Type of Prime Mover. Humphrey Maccallum. Discusses the output and speed of the units and the relation between the size and output of electric generators, and the effect on the cost. 1500 w. Mech Engr—April 12, 1912. No. 32266 A.

Railway Motors

Equipment for 1500-Volt D. C. Line of Piedmont Traction Company. The motors have forced draft and are connected two in series. Ills. 1500 w. Elec Ry Jour—Feb. 3, 1912. No. 30251.

Methods Used in Mounting Railway Motors. Considers methods used in mounting the motor on the truck. Ills. 1500 w. Ry & Loc Engng—April, 1912. No. 31750 C.

See also same heading, under STREET AND ELECTRIC RAILWAYS.

Reactance

Armature Reactance in D. C. Machines with Parallel Winding (Over de ankerreactie van gelijkstroommachines met zuivere parallelwikkeling). W. Luloffs. Mathematical discussion on four-pole machines. Diagrams. 9000 w. De Ingenieur—June 8, 1912. No. 34563 D.

Regulation

Direct-Current Generator Regulation. P. Amsler. Illustrates and describes a simple device giving a fine regulation of pressure. 800 w. Elec Wld—July 27, 1912. No. 34820.

Pressure Regulators. S. J. Watson. Abstract of a paper read before the Incor. Munic. Elec. Assn. Considers regulators which may be provided as a separate piece of apparatus with the object of maintaining a constant pressure on bus bars, or constant speed on direct current motors. 800 w. Mech Engr—July 12, 1912. No. 34715 A.

Resistances

The Calculation of Starting Resistances and Motor Fuses (Zur Berechnung von Anlasswiderständen und Motorsicherungen). Erich Jasse. Formulae for the determination of starting switches and cutout fuses for motors. Diagrams. Serial. 1st part. 5200 w. Elektrotech u Masch—Aug. 11, 1912. No. 36138 D.

Rotary Converters

Current Forms in the Coils of a Synchronous Converter. J. H. Morecroft. Gives photographs of the current forms in the different coils of a small rotary, with explanatory remarks. 500 w. Elec Wld—June 29, 1912. No. 34144.

Electric Mine Operations—Rotary Converters. Stuart Rice. Calls attention to some of the more recent tendencies in the application of electric current. 1800 w. Min & Engng Wld—June 29, 1912. No. 34137.

Rotary Converters and Their Operation. Norman G. Meade. Gives classification and discusses hunting regulation, and compounding. Ills. 1800 w. Power—June 25, 1912. No. 33914.

Characteristics of Commutating Pole Rotary Converters. J. L. McK. Yardley. Illustrated account of recent improvements and their rapidly expanding use. 2200 w. Elec Jour—Aug., 1912. No. 35360.

Synchronous Booster Rotary Converters with Compound Interpoles. Illustrated description of this machine. 1200 w. Power—Aug. 27, 1912. No. 35441.

Self-Regulating

Self-Regulating Dynamos for Train and Car Lighting. Illustrates and describes recent improvements in dynamo-electric machinery, where speed of operation is variable and self-regulation important. Inventions of A. H. Midgeley and C. A. Vandervell. 1200 w. Prac Engr—Dec. 8, 1911. No. 29042 A.

Single Phase

A New Single-Phase Motor. S. M. Robinson. Discusses its theory and action. 4000 w. Jour Am Soc of Nav Engrs—Nov., 1911. No. 28733 H.

The Single-Phase Repulsion Motor. Thomas F. Wall. Read before Sec. G of the British Assn. Establishes formulae and develops theory, presenting experimental evidence of its accuracy. 3000 w. Engng—Jan. 12, 1912. Serial. 1st part. No. 29913 A.

Single-Phase Commutator Motors. R. E. Hellmund and E. W. P. Smith. Considers various commutating-pole arrangements. 3000 w. Elec Jour—July, 1912. No. 34841.

See also same heading, under STREET AND ELECTRIC RAILWAYS.

Sparking

Minimizing Sparking in Direct-Current Machinery. Prof. Jens Bache-Wüg. Discusses the effect of altering the field form upon the commutation. 1500 w. Elec Wld—Sept. 21, 1912. No. 36237.

Speed Regulation

Speed Regulation of Direct Current Motors. Considers methods of control and of obtaining good variation. Ills. 2500 w. Prac Engr—Nov. 10, 1911. No. 28120 A.

Methods of Varying the Speed of Alternating-Current Motors. Gus A. Maier. Discusses the methods used and proposes experiments on these lines. 7500 w. Pro Am Inst of Elec Engrs—Dec., 1911. No. 28799 F.

Discussion on "Methods of Varying the Speed of Alternating-Current Motors." New York, Dec. 8, 1911. The paper by Gus A. Maier is discussed. 6000 w. Pro Am Inst of Elec Engrs—Feb., 1912. No. 30827 F.

Methods for Economical Speed Regulation of Three-Phase Motors. Dr. G. Meyer. Abstract trans. from *Elek Kraft und Bahnen.* Discusses means of varying the speed without loss and describes the several uses to which they can be applied. 3000 w. Elect'n, Lond—Feb. 2, 1912. Serial. 1st part. No. 30393 A.

The Speed Control of Large Induction Motors. N. Shuttleworth. Abstract of a paper before the Rugby Engng. Soc., dealing with the most important methods for changing the speed. Diagrams. 1500 w. Engr, Lond—Jan. 19, 1912. No. 30184 A.

Design of Motor Speed Regulators. In continuation of an earlier article particulars are given of the method of designing the speed regulators of direct-current motors. 1200 w. Prac Engr—Feb. 16, 1912. Serial. 1st part. No. 30791 A.

A New Electric Reducing Gear. Dr. Max Breslauer. Illustrates and describes the "unipolar gear." 3000 w. Elect'n, Lond—Feb. 2, 1912. No. 30394 A.

Starters

An Automatic Starting Device for Asynchronous Motors. N. Pensabene-Perez. Abstract of a paper before the Birmingham Sec. of the Inst. of Elec. Engrs. Considers the problem and describes device designed by the author. 1500 w. Elect'n, Lond—Dec. 22, 1911. No. 29455 A.

Self-Starting Synchronous Motors. Carl J. Fechheimer. Gives calculations and formulae, explaining the principle upon which they are based, and an analytical treatment of the subject applied to motors with definite pole construction. 12600 w. Pro Am Inst of Elec Engrs—April, 1912. No. 32423 F.

Motor Starting Currents as Affecting Large Transmission Systems. P. M. Lincoln. An investigation of starting conditions in mills taking power from company lines. 3000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34068 F.

Synchronous Motors

Synchronous and Asynchronous Reactance. J. Rezelman. Deals with a four-pole turbo-alternator, the reactance of which is not constant, but depends upon the relative position of the rotor and stator coils. Ills. 1000 w. Elect'n, Lond —Jan. 12, 1912. Serial. 1st part. No. 29896 A.

Three Phase Synchronous Motors without Direct Current Excitation (Drehfeld-Synchronmotoren ohne Gleichstromerregung). G. Benischke. Describes the operation of this type. 2200 w. Elektrotechnik u Maschinenbau—March 3, 1912. No. 31374 D.

Potential Control of Alternating Current Systems by Synchronous Motors with Automatic Voltage Regulators. Ernst J. Berg. First of a series of articles dealing with the synchronous condenser as a means for the improvement of power factor and the maintenance of constant voltage. 2000 w. Gen Elec Rev—Sept., 1912. Serial. 1st part. No. 35675 C.

Synchronous Motor Performance. Nicholas Stahl. Explains methods for determining the performance without resort to complicated diagrams or equations. 3500 w. Elec Wld—July 20, 1912. No. 34695.

Connections for Synchronizing. Harold W. Brown. Diagrams and explanatory notes. 2000 w. Elec Jour—July, 1912. No. 34842.

Three-Phase

Three-Phase Systems with Continued Changes of Frequency (Drehstromsystem mit stetig veränderbarer Periodenzahl). Karl Zickler and Rudolph Czepek. Discusses the adaptability of such systems for marine propulsion. Ills. 4800 w. Elektrotech u Masch—Aug. 4, 1912. No. 36137 D.

Turbo-Alternators

Curtis Turbo Alternators. Describes the theory upon which the working of the Curtis turbine is based, and its application to the building of large turbo-generator sets. Ills. 2500 w. Elect'n, Lond —July 12, 1912. Serial. 1st part. No. 34704 A.

Two 3,000-Kilowatt Turbo-Alternators. Drawings and description of turbo-alternators for the Argentine Republic. 600 w. Engr, London — May 10, 1912. No. 32997 A.

The Mechanical Effect from Unexpected Short-Circuits in Turbo-Alternators (Les Effets Mécaniques des Court-Circuits Brusques sur les Turbo-Alternateurs). M. P. Boucherot. Mathematical discussion. Diagrams. 4900 w. Mem Soc Ing Civ de France—Jan., 1912. No. 32081 G.

Turbo-Generators

The Mechanical Design of Direct-Current Turbo-Generators. R. J. Roberts. Abstract of a paper read before the Manchester Loc. Sec. of the Inst. of Elec. Engrs. Discusses some of the mechanical difficulties and suggests methods for removing them. Ills. 5000 w. Elect'n, Lond—Nov. 10, 1911. No. 28115 A.

Electric Ship Propulsion with Ljungstrom Turbo-Generators. Editorial letter from Berger Ljungstrom giving information concerning their use for electrical transmission. 2500 w. Engng — April 19, 1912. No. 32473 A.

Operating Characteristics of Large Generators. A. B. Field. Considers the trend of modern practice in respect to some requirements of station engineers. 4500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34069 F.

Two-Cycle Motors

A Throttling Two-Cycle Motor. C. Francis Jenkins. Remarks on its adaptability for automobiles if it could be throttled down until it turned over slowly, illustrating a motor built to test. 1000 w. Sci Am Sup—Jan. 6, 1912. No. 29352.

Unipolar Generators

Notes on a Large Unipolar Generator. W. A. Dick. Deals with the construction and performance of the unipolar type of direct-current machine. Ills. 1200 w. Elec Jour—Sept., 1912. No. 36044.

Vibrations

Vibration Produced by Motor Generators. Elmer E. Hall. Explains the utilization of a special recorder for determining the causes of vibratory disturbances. Ills. 1500 w. Elec Wld—July 27, 1912. No. 34821.

Voltage Regulation

The Voltage Regulation of Rotary Converters. Brief consideration of methods of regulating rotary converters. 1400 w. Engr, Lond—March 8, 1912. No. 31262 A.

Automatic Voltage Regulation of Power Transmission Systems. H. A. Laycock. Describes various types of automatic voltage regulating apparatus. 900 w. Gen Elec Rev—June, 1912. No. 33376 C.

Essays on Voltage Regulation. F. W. Shackelford. Outlines methods of regulation and gives suggestions for laying out a new system or reconstructing an old one. 2500 w. Gen Elec Rev—July, 1912. Serial. 1st part. No. 34233 C.

A New Process of Voltage Regulation in Self-Exciting D. C. Machines, Especially Shunt Machines in Wide Limits (Ein neues Verfahren zur Spannungsregelung von selbsterregten Gleichstrommaschinen, insbesondere Nebenschlussmaschinen, in sehr weiten Grenzen). M. Osnos. Mathematical discussion. Diagrams. 1500 w. Elek u Masch—Sept. 8, 1912. No. 36647 D.

Weight Efficiencies

Weight Efficiency of Electric Motors and of Prime Movers. W. B. Hird. Abstract of paper read before the Newcastle Soc. of Inst. of Elec. Engrs. Compares the weight efficiencies of electric motors and different types of prime movers. 1800 w. Elect'n, Lond—April 19, 1912. No. 32497 A.

Windings

Polyphase Induction Regulator Windings. E. E. Lehr. Describes briefly the operation of a regulator, and gives a detailed description of the method of using vectors in checking windings. Ills. 1500 w. Elec Jour—Nov., 1911. No. 28321.

Repairing Induction Motor Winding. R. H. Fenkhausen. Describes operations required in the winding of the diamond-shaped stator coils. Ills. 2000 w. Power Jan. 9, 1912. No. 29511.

Standard Instruments and Transformer Windings. Charles C. Garrard. Critical consideration of some recommendations of the British Engineering Standards Committee. 1700 w. Elect'n, Lond—June 28, 1912. No. 34311 A.

Direct-Current Motor Field Coils. R. B. Treat. Read before the Assn. of Ir. and St. Elec. Engrs. Describes the characteristics of several kinds of motor, some applications, and discusses the appropriate field winding. 2000 w. Elec Rev & W Elect'n—Oct. 12, 1912. No. 36778.

Wiring

Special Cases of Parallel Connection Treated Analytically (Spezielle Fälle der Parallelschaltung in analytischer Behandlung). J. Kuhn. Presenting several unusual cases and explaining most effective modes of treatment. 5000 w. Elek u Masch—Feb. 4, 1912. No. 30527 D.

Induction Motor Wiring. H. B. Foote. Deals with the squirrel-cage type of motor, developing a wiring table. 900 w. Elec Wld—May 25, 1912. No. 33154.

ELECTRO-CHEMISTRY

Canada

Electrochemical and Electrometallurgical Developments in Canada. S. Dushman. Abstract of paper before the Am. Elec. Chem. Soc. Describes the character and scope of plants now employed, and discusses future developments throughout the country. 5000 w. Elect'n, Lond—June 28, 1912. No. 34310 A.

Carbureters

See same heading, under MECHANICAL ENGINEERING, *Automobiles*.

Cells

Notes on the Chemistry of the Lead Cell. J. Horsnell May. Shows a need of an examination of the effect of impurities. 1200 w. Elec Rev, Lond—Jan. 19, 1912. No. 30153 A.

Dry Batteries: The Relation Between the Incidence of the Discharge and the Relative Capacity of Cells of Different Manufacture. S. W. Melsom. Gives results of investigation of four different cells. Short discussion. 1500 w. Elect'n, Lond—April 12, 1912. No. 32253 A.

Dry Cells—Their Uses and Testing. Tentative report of the American Electrochemical Society Committee on dry cell tests. 5500 w. Met & Chem Engng—June, 1912. No. 33417 C.

The Modern Dry Cell, Its Development, Construction and Manufacture. H. K. Richardson. Describes changes that have contributed to the improvement of cell construction. Ills. 1700 w. Met & Chem Engng—Sept., 1912. No. 35726 C.

See also Accumulators, under *Generating Stations.*

Corrosion

Does Pure Iron Rust? Charles F. Burgess. As no pure iron is in existence it is merely a conjecture. Arguments for and against the purity theory are considered. 1500 w. Wis Engr—Oct., 1912. No. 37026 C.

The Mechanism of Corrosion. J. Newton Friend, J. Lloyd Bentley, and Walter West. Read before the Iron & Steel Inst. Gives results of recent experimental study. 2500 w. Mech Engr—May 10, 1912. No. 32980 A.

The Corrosion of Nickel, Chromium, and Nickel-Chromium Steels. J. Newton Friend, J. Lloyd Bentley, and Walter West. Read before the Iron & Steel Inst. A study of corrodibility of steel as influenced by alloying elements. 2000 w. Ir & Coal Trds Rev—May 10, 1912. No. 33018 A.

The Influence of Carbon on the Corrodibility of Iron. C. Chappell. Read before the Iron & Steel Inst. Brief account of investigations and results. 1400 w. Ir & Coal Trds Rev—May 10, 1912. No. 33019 A.

Corrosion of Steel and Its Prevention. Allerton S. Cushman. Read before the Am. Iron & Steel Inst. Gives examples of unusual resistance in wrought iron. Analyses correspond to those of the newer open hearth products. Ills. Also discussion. 4000 w. Ir Age—May 23, 1912. No. 33055 C.

Iron Corrosion Investigations. Oliver P. Watts. Read before the Am. Elec.-Chem. Soc. A study of the protective action of arsenic, giving results of experiments. 1800 w. Chem Engr—June, 1912. No. 33961 C.

The Corrosion of Iron and the Protection of Structural Iron-Work. L. Archbutt. Read to the Derby Soc. of Engrs. Discusses causes and protective measures. 4500 w. Engng—June 7, 1912. Serial. 1st part. No. 33791 A.

Corrosion by Electrolysis. C. H. Ehrenfeld. Discusses the effect of electrolysis upon parts of icemaking and refrigerating machinery and the prevention. 2000 w. Ice & Refrig—July, 1912. No. 34234 C.

Corrosion of Iron and Steel. William R. Fleming. From a paper read before the Cincinnati section of the Am. Chem. Soc. Reports experiments to confirm the electrolytic theory. Ills. 1500 w. Ir Age—July 11, 1912. No. 34359 C.

The Rusting of Cast Iron (Das Rosten des Gusseisens). K. Arndt. Microscopic studies on the electrolytic theory of corrosion. Ills. Serial. 1st part. 3500 w. Geiss Zeit—Aug. 1, 1912. No. 36128 D.

Contributions to the History of Corrosion. Arnold Philip. Read before the Inst. of Metals. Investigates the localized corrosion of condenser tubes by contact with electro-negative substances, and preventive methods. 3000 w. Engng—Jan. 19, 1912. Serial. 1st part. No. 30178 A.

Prevention of Corrosion in Metal Lath. Clarence W. Noble. Reports extensive investigations to determine what improvements could be made in protective coatings. 3000 w. Cement—Jan., 1912. No. 29689.

The Corrosion of Condenser Tubes by Contact with Electro-Negative Substances. Arnold Philip. Read before the Inst. of Metals. Discusses especially localized corrosion occurring in condenser tubes made of Admiralty composition, and the problems yet to be solved. Also editorial. 3000 w. Mech Engr—Jan. 26, 1912. No. 30304 A.

Effects of Superheated Steam on Cast Iron Pipe. William Campbell and John Glassford. Read before the Int. Cong. for Testing Mat. Gives results of a series of experiments which indicate that the oxidation penetration increases with the silicon content. Ills. 2500 w. Ir Trd Rev—Sept. 19, 1912. No. 36029.

The Corrosion of Boilers and of Piping on Shipboard. Frank Lyon. Describes conditions observed on the SS. *Oregon* and *New Jersey* and experimental investigations made to prevent corrosion, with the results. 7500 w. Jour Am Soc of Nav Engrs—Aug., 1912. No. 36382 H.

Results of the Investigation of the Electrolytic Corrosion of Underground Metallic Structures in Milwaukee. Ray Palmer. Information of the findings and conclusions, with recommendations. 2500 w. Engng & Con—May 1, 1912. No. 32555.

The Findings of the Investigators of Electrolysis in Underground Metallic Structures in Chicago. Abstract of conclusions and recommendations as given in the report to the Commissioner of Public Works. 1800 w. Engng & Con—Dec. 13, 1911. No. 28962.

Electrolytic Action in Steel Construction (Elektrolytische Zersetzungserscheinungen bei Betonbauton). W. Heym. Discussion of destructive action of electrolysis. Serial. 1st part. 1500 w. Elektrochem Zeit—Nov., 1911. No. 28847 D.

Insulation as a Means of Minimizing Electrolysis in Underground Pipes. Dr. E. B. Ross and Burton McCollum. Information concerning investigations being made by the Bureau of Standards. 2500 w. Am Gas Lgt Jour—Jan. 1, 1912. Serial. 1st part. No. 29275.

Corrosion Effects in the Steel Superstructure of the Simplon Tunnel (Ueber die Abrostungserscheinungen am eisernen Oberbau im Simplontunnel). Alb. Dänzer-Ischer. Discussion on the occurrence, the cause and effect of such corrosion, and its probable explanation by the electrolytic theory. Ills. Serial. 1st part. 5500 w. Schweiz Beuzeitung—Apr. 13, 1912. No. 32713 D.

Electrolytic Corrosion of Iron by Direct Current in Street Soil. Albert F. Ganz. Describes experiments designed to determine the relative rates of corrosion of various kinds of iron in two kinds of street soil, when subjected to such low currrent densities as are found on underground structures. 3500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34071 F.

Corrosion Effects on the Rails of Electric Railways (Rostangriffe an Gleisen elektrischer Bahnen). Herr Bloss. A discussion of such defects as exemplified in the Simplon Tunnel. Ills. 1700 w. Elek Kraft u Bahnen—Aug. 24, 1912. No. 36154 D.

Painting Engine and Fireroom Bilges. Henry Williams. Discusses deterioration due to corrosion and the necessity for protection, considering the methods adopted and their advantages. 3500 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33829 H.

The Corrosion of Bronze Propeller-Blades. William Ramsay. Illustrated study of the varieties of blade corrosion 2500 w. Engng—May 24, 1912. No. 33461 A.

The Protection of Refrigerating Apparatus Against Corrosion. Morgan B. Smith. Read before the Am. Soc. of Refrig. Engrs. Considers the metallic apparatus, the brine solution, and the relation of the refrigerating apparatus to the other apparatus in the vicinity. 2500 w. Ice & Refrig—Nov., 1911. No. 27697 C.

Discussion on "Electrolytic Corrosion in Reinforced Concrete." Chicago, June 30, 1911. Discusses the paper by C. Edward Magnusson and G. H. Smith. Ills. 9800 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28201 F.

See also Electrolysis, under CIVIL ENGINEERING, *Construction;* Reinforced Concrete, under CIVIL ENGINEERING, *Materials of Construction;* Pipe Corrosion, under CIVIL ENGINEERING, *Water Supply;* Paint, under MARINE AND NAVAL ENGINEERING; Boiler Corrosion, under MECHANICAL ENGINEERING, *Steam Engineering,* and Ties, under RAILWAY ENGINEERING, *Permanent Way and Buildings.*

Crystolon

Crystolon-Silicon Carbide. Francis A. J. Fitz Gerald. Illustrated description of the plant of the Norton Co. at Chippawa, Ont., for the manufacture of silicon carbide. 2500 w. Met & Chem Engng—Sept., 1912. No. 35724 C.

Electrical Precipitation

The Electrical Precipitation of Suspended Matter in Gases. W. W. Strong. An investigation of the electrical properties of gases containing solid and liquid matter in suspension (especially smoke from soft coal) and to ascertain the means by which an electrostatic or an electro-magnetic field will cause a separation. 7500 w. Jour Fr Inst—Sept., 1912. No. 36303 D.

Electric Furnaces

Engineering Features of Electric Furnaces. Carl Hering. Discusses the characteristics of the principal types. Ills. 3800 w. Engineering Magazine—Jan., 1912. No. 29207 B.

Some Engineering Features of Electric Furnaces. Carl Hering. Discusses briefly some of the engineering features involved in the design and construction of electric furnaces. 5000 w. Pro Engrs' Club of Phila—Oct., 1911. No. 27631 D.

Flow of Heat Through Bodies. Carl Hering. Discusses heat losses in electric furnaces, giving a table of thermal resistivities. 3000 w. Met & Chem Engng—Dec., 1911. No. 28590 C.

The Hering "Pinch Effect" Furnace. E. Kilburn Scott. Abstract of a paper before the Faraday Soc. Explains its advantages. Discussion. 2500 w. Ir & Coal Trds Rev—Dec. 1, 1911. No. 28787 A.

Thirty Years' Progress in the Electric Furnace. F. A. J. Fitzgerald. A review of development. 3500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34068 F.

The Electric Furnace (Der elektrische Hochofen). W. Rodenhauser. A general review of the history of electric furnaces, with particular reference to the Trollhättan plant and its work. Ills. 6000 w. Elek Kraft u Bahnen—May 24, 1912. No. 33533 D.

An Efficient Electric Furnace for High Temperatures. D. F. Calhane and E. E. Bard. Illustrated detailed description. 1800 w. Met & Chem Engng—Aug., 1912. No. 34975 C.

Notes on the Development of the Modern Electric Furnace (Beitrag zum Entwicklungstand neuzeitlicher Elektroöfen). W. Kunze. Reviews the development of the electric-arc and induction furnaces, as involved in the leading constructions. Serial. 1st part. 4200 w. Stahl u Eisen—July 4, 1912. No. 35500 D.

Improvements in Electric Furnaces and Their Application in the Manufacture of Steel. Hans Nathusius. Read before the Iron & Steel Inst. Remarks on the induction furnace and the arc furnace, giving a detailed description of recent improvements in the latter type. 3500 w. Mech Engr—May 10, 1912. Serial. 1st part. No. 32982 A.

The Electric Furnace for Small Steel Castings. Discusses crucible-steel, Tropenas steel, and electric furnace castings. 1800 w. Met & Chem Engng—Jan., 1912. No. 29315 C.

An Electric Furnace for Non-Ferrous Metals. Illustrated description of furnace invented by R. S. Wile, a combination of the arc and resistance types. 1000 w. Ir Trd Rev—Feb. 1, 1912. No. 30197.

Experiments with a Girod Steel Furnace. Editorial review of an article in

Stahl und Eisen, by Dr.-Ing. A. Müller, giving an account of the working of a 3-ton Girod furnace installed at Oberhausen. Ills. 2500 w. Engng—Feb. 23, 1912. No. 31034 A.

Héroult Electric Furnace at Braintree. Illustrates and describes a furnace of two tons' capacity, employed to make steel for castings. 600 w. Ir & Coal Trds Rev—March 8, 1912. No. 31270 A.

Experiments on Heat Insulation. F. A. J. FitzGerald. Read before the Am. Elec-Chem. Soc. Describes preliminary experiments in a study of heat losses in electric furnaces. 1400 w. Can Engr—May 2, 1912. No. 32634.

Johnson Continuous Electric Zinc Furnaces. Illustrated description of a furnace for smelting zinc ores. 1500 w. Ir Age—May 2, 1912. No. 32513 C.

See also Eletrometallurgy, under *Electro-Chemistry;* Electric-Furnaces, under MINING AND METALLURGY, *Gold and Silver*, and Electro-Metallurgy, and Ferro-manganese, under MINING AND METALLURGY, *Iron and Steel.*

Electrodes

Furnace Electrodes Practically Considered. R. Turnbull. Read before the Am. Elec.-Chem. Soc. Explains the relation of the electrode to the electric furnace, what the electrode is composed of, giving hints as to the best mannner of employing electrodes. 2000 w. Can Engr—May 2, 1912. No. 32633.

Artificial Graphite and Electrolytic Processes. Francis H. Davies. Considers the use of artificial graphite electrodes. Ills. 1700 w. Elec Rev, Lond—Aug. 23, 1912. No. 35742 A.

Electrodes of Pure Graphite and Their Use in Electrometallurgy (Les électrodes en graphite pur et leur utilisation en électrométallurgie). O. Favarney. Reviews practice in the electric furnace. Ills. 4200 w. Rev Industrielle—Aug. 24, 1912. No. 36207 D.

Electrolysis

Electrolytic Dissociation. Svante Arrhenius. From the *Jour. of the Am. Chem. Soc.* Gives an outline of the history of the ionic theory as sketched by its founder. 4500 w. Sci Am Sup—April 20, 1912. No. 32174.

Electricity Applied to Chemistry. Harry C. Jones. Discusses the electrolysis of acids, bases and salts, and the possibilities of electrolytic separations. 4000 w. Eng & Min Jour—May 25, 1912. No. 33083.

Electricity and Chemical Action. Harry C. Jones. Explanation of the primary and secondary cell, the conversion of electrical into intrinsic energy, etc. 6500 w. Eng & Min Jour—May 18, 1912. No. 32944.

Electrolytic-Analysis with Platinum Electrodes of Light Weight. F. A. Gooch and W. L. Burdick. Experiments with forms of apparatus which require the least amount of this expensive metal. 1800 w. Am Jour of Sci—Aug., 1912. No. 35315 D.

Oerlikon Electrolysers at the Army Aircraft Factory. G. Wüthrich. Illustrates and describes plants for the production of hydrogen and oxygen by the electrolysis of water, and the uses to which the electrolysers can be applied. 2500 w. Engng —Nov. 3, 1911. No. 28030 A.

Electrometallurgy

Steel Direct from the Ore in the Electric Furnace. A. Stansfield. Illustrated description of the Evans-Stansfield process, on which iron ore mixed with charcoal and any necessary flux is heated in a closed chamber until the ore is reduced to the metallic state. 1500 w. Can Engr —Nov. 16, 1911. No. 28146.

The "Paragon" Electric Furnace and Recent Developments in Metallurgy. Joh. Härdén. Read before the Faraday Soc. Illustrated description of this furnace, explaining the considerations that led to its design. 2000 w. Met & Chem Engng—Nov., 1911. No. 27614 C.

The "Paragon" Electric Furnace and Recent Developments in Metallurgy. Joh. Härden. Abstract of a paper before the Faraday Soc. Describes the furnace named, explaining its use. Also brief discussion. 2500 w. Elect'n, Lond—Nov. 3, 1911. No. 28018 A.

The Grönwall Steel Refining Furnace. Thomas Duncan Robertson. Illustrated description of the construction and electrical equipment, with statement of advantages claimed. 2000 w. Met & Chem Engng—Nov., 1911. No. 27609 C.

A Microscopic Study of California Electric-Furnace Pig Iron. D. A. Lyon and F. C. Langenberg. Illustrated study of a sample from the plant at Heroult, Cal. 1000 w. Met & Chem Engng—Aug., 1912. No. 34973 C.

Electrochemical and Electrometallurgical Developments in Canada. S. Dushman. Read before the Am. Elec-Chem. Soc. Describes electrochemical plants at present in operation, and gives a survey of the mineral resources, considering their possible exploitation by electrochemical methods. 3000 w. Ap Sci—Nov., 1911. No. 28275 C.

Electric Induction Furnace for Cast Steel. C. H. Vom Baur. Read before the

Am. Found. Assn. Illustrated description of the Roechling-Rodenhauser type which is in extensive use in Europe. 1500 w. Foundry—Sept., 1912. No. 35705.

Steels Made in the Electric Furnace. E. F. Lake. Illustrated article dealing with the characteristics of such steels. 4500 w. Cassier's Mag—Aug., 1912. No. 36293 B.

See also Electric Furnaces, under *Electro-Chemistry;* Foundry Furnaces, under MECHANICAL ENGINEERING, *Machine Works and Foundries;* and Electrometallurgy, and Pig Iron, under MINING AND METALLURGY, *Iron and Steel.*

Electroplating

Modern Developments in the Electro-Deposition of Metals and Alloys. George P. Lee. Abstract of a paper read at the London exhibition of the non-ferrous metals. Reviews the history of development of electro-deposition, and the theory now generally accepted, describing a new solution and its applications. Ills. 4500 w. Mech Engr—Oct. 4, 1912. No. 36845 A.

The Acid Copper Solution and Method of Making It. Explains the advantages and disadvantages of this solution, and how to use it successfully. 1000 w. Brass Wld—June, 1912. No. 33836.

Brass and Bronze Plating Solutions and How to Make Them. First of a series of articles discussing their electrodeposition. 700 w. Brass Wld—Jan., 1912. Serial. 1st part. No. 29878.

Hot-Cyanide Copper Solution. Seymour W. Rowsbar. Information concerning solutions for copper plating. 2000 w. Foundry—March, 1912. No. 30954.

The Operation of Duplex Copper Baths. Seymour W. Rowsbar. Suggestions for electroplating. 1500 w. Foundry—April, 1912. No. 31694.

On the Simultaneous Electrolytic Deposition of Copper and Zinc from Various Solutions Not Containing Cyanide. M. de Kay Thompson. Reports an investigation made to see whether some other than the usual cyanide bath could not be found from which brass could be plated, which would not have disadvantages of the cyanide bath. 3000 w. Met & Chem Engng—Aug., 1912. No. 34974 C.

Electroplating on Aluminum. O. P. Watts. Brief descriptions of processes claimed by their originators to give satisfactory deposits, but not successful in the hands of others. 1500 w. Wis Engr—Jan., 1912. No. 30045 C.

A Few Pointers on Nickelplating. Seymour W. Rowsbar. Discusses the practical side of electrodeposition of metals and other finishes. 2500 w. Foundry—Feb., 1912. Serial. 1st part. No. 30135.

Notes on the Electrodeposition of Black Nickel. Suggestions for working the solution successfully. 1000 w. Brass Wld—Feb., 1912. No. 30474.

A New Method of Electrodepositing Nickel and Iron Together. Describes a method recently patented by August Leuchter. 800 w. Brass Wld—June, 1912. No. 33839.

Purity as a Requisite in Silver Anodes. J. L. R. Brown. Address to the Nat. Electroplaters' Assn. Discusses bad results from the use of impure silver. 2000 w. Brass Wld—March, 1912. No. 31445.

The Electroplating of Wood. Describes the method. 1200 w. Brass Wld—June, 1912. No. 33837.

Photographic and Microphotographic Reproduction of Electrically Deposited Metal (Die Photographische und Mikrophotographische Wiedergabe elektrolytischer Metallniederschläge). B. Wäser and R. Kühnel. Shows the effects of anode and cathode deposits. Ills. 1500 w. Elektrochem Zeit—Nov., 1911. No. 28846 D.

Electrotyping

The Galvanoplasty of Heavy Nickel; Tin and Zinc-Plating (La Galvanoplastie du Nickel sous de grandes Épaisseurs; Étamage et Zincage). A. Hollard. Presents formulas for the best results. 2700 w. Bull Soc d' Encour—July, 1912. No. 36195 E + F.

Induction Furnaces

The Action of Electro-Mechanical Forces on the Bath of Induction Furnaces. Magnus Unger. Analysis of the "pinch effect," the "centrifugal effect," and the combined effect. Diagrams. 2000 w. Met & Chem Engng—May, 1912. No. 32644 C.

Nitrogen

The Manufacture of Nitrates from the Atmosphere. Ernest Kilburn Scott. Illustrated review of this metallurgical development of electric power, the processes and installations and subjects related. Short discussion. 13000 w. Jour Soc of Arts—May 17, 1912. No. 33255 A.

The Fixation of Atmospheric Nitrogen (La Fixation de l'Azote Atmosphérique). A. Brochet. Review of methods and description of processes. Ills. 7200 w. Rev Gen des Sciences—Dec. 15, 1911. No. 29785 D.

The Production of Nitric Acid from Atmospheric Nitrogen (La Produzione dell' acido nitrico dall'azoto atmosferico). E. Biffi. Describes electric apparatus and process. Ills. 2800 w. Monit Tecnico—Jan. 20, 1912. No. 30633 D.

The Fixation of Atmospheric Nitrogen for the Formation of Aluminum Nitride (La Fixation de l'Azote Atmosphérique par l'Emploi des Nitrures d'Aluminium). Francis Marre. The use and history of this preparation in agriculture, and chemical description of methods for derivation. 3500 w. Génie Civil—May 11, 1912. No. 32784 D.

Utilizing Coke-Oven Gases for the Recovery of Nitric Acid from Atmospheric Nitrogen. Plan and description of Hausser apparatus at Nuremberg. 2500 w. Ir & Coal Trds Rev—June 28, 1912. No. 34341 A.

Atmospheric Nitrogen by the Aid of Coke-Oven Gases. Describes the coke-oven gas nitrogen plant at Nuremberg. 2200 w. Compressed Air—Aug., 1912. No. 35329.

The Production of Nitric Acid from Atmospheric Nitrogen by Means of Coke Oven Gas. (Ausnutzung der Koksofengase zur Gewinnung von Salpetersäure aus dem Stickstoff der Luft.) Herr Dobbelstein. Description of plant, apparatus and process, with details as to cost of operation. Ills. 6000 w. Glückauf—Feb. 24, 1912. No. 31335 D.

See also Coking By-Products, under MINING AND METALLURGY, *Coal and Coke*, and Saltpeter, under MINING AND METALLURGY, *Minor Minerals*.

Norway

Chemical Industries of Norway. Thomas H. H. Norton. Information from daily consular and trade reports concerning the recent industrial developments, especially in electro-chemical industries. 3000 w. Mfrs' Rec—Nov. 23, 1911. No. 28255.

Electro-Chemistry and Metallurgy in Norway. Thomas H. Norton. Information concerning these industries. 1800 w. Min & Engng Wld—Feb. 17, 1912. No. 30481.

Ozone

Ozone: Its Properties and Commercial Production. Milton W. Franklin. Considers the production of ozone, ozone generators, forms of ozonators, etc. 3500 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33244 F.

Increasing Human Efficiency by Ozone. W. H. Radcliffe. Explains the qualities of ozone and how it is made, and the use of electrical discharges in sanitation. Ills. 1800 w. Cassier's Mag—June, 1912. No. 33843 B.

The Industrial Uses of Ozone. F. Mollwo Perkin. Information concerning ozone, its production and applications. Ills. 2800 w. Nature—Feb. 22, 1912. No. 31012 A.

ELECTRO-PHYSICS

Air Strength

The Electric Strength of Air. J. B. Whitehead. Third of a series of papers describing investigations of the physical laws underlying the breakdown of the air under electric stress. Ills. 7500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34061 F.

Alternating Currents

Alternating Current Engineering. William R. Bowker. Discussion of starting methods for A. C. motors, which do not involve an auto-transformer or resistance in rotor circuit. Diagrams. 1500 w. So Elect'n—March, 1912. No. 31098.

Elementary Notes on Alternating Currents. First of a series of explanatory articles. Ills. 1800 w. Elec Rev & W Elect'n—June 15, 1912. Serial. 1st part. No. 33748.

Alternating-Current Development in America. William Stanley. Describes the condition of the electric lighting industry when the A. C. system was introduced; the causes that made it necessary to devise a new system of distribution, and its growth. Ills. 5000 w. Jour Fr Inst—June, 1912. No. 34025 D.

Electric Potential in Alternating Magnetic Fields. C. F. Jenkin. Discusses the meaning of the term "Potential Difference" and the difficulty of measuring this quantity. 2000 w. Elect'n, Lond—Feb. 16, 1912. Serial. 1st part. No. 30789 A.

Reactance in Alternating Current Circuits. C. P. Steinmetz. Considers reactance as it affects the electric circuit, its objectionable and beneficial effects. Discussion. 9000 w. Jour W Soc of Engrs—Jan., 1912. No. 30816 D.

On Wave-Form Sifters for Alternating Currents. Albert Campbell. Abstract of paper before the Phys. Soc. Explains the wave form sifter and some of its applications. 800 w. Elect'n, Lond—April 19, 1912. No. 32494 A.

Alternators in Parallel; Installation and Operation. George E. Edwards. A discussion of the factors to be considered in installing and operating such units to secure satisfactory results. 4500 w. Min & Engng Wld—June 15, 1912. No. 33751.

A Simple Grouping for the Electrolytic Rectification of Alternating Currents of Any Number of Phases. G. E. Bairsto. Gives groupings of cells for electrolytic rectification, showing that these may be reduced to a grouping of electrodes in a single cell. 800 w. Elect'n, Lond—July 26, 1912. No. 35145 A.

Cathode Rays

Properties of the Wehnelt Cathode Rays. C. T. Knipp. Reviews the work of Prof. Wehnelt, of Berlin, in cathode rays and studies the discharge and the deflection of the rays. Ills. 3500 w. Pro Am Inst of Elec Engrs—Oct., 1912. No. 37134 F.

Coils

An Experimental Investigation of the Influence of the Condenser on the Working of a Ruhmkorff Coil. W. H. Wilson. Abstract of a paper read before the Roy. Soc. Report of research undertaken to ascertain the exact function fulfilled by the condenser. 1500 w. Elect'n, Lond—Aug. 30, 1912. No. 35875 A.

The Calculation of High Tension Reactance Coils Free of Iron (Die Berechnung eisenfreier Drosselspulen für Starkstrom). Fritz Emde. Mathematical discussion. Diagrams. Serial. 1st part. 2400 w. Elektrotech u Maschinenbau—March 17, 1912. No. 32069 D.

The Inherent Temperature in Round Coils (Die Beharrungstemperatur im Innern von runden spulen). Karl Gruber. Mathematical discussion. Serial. 1st part. 1200 w. Elek Rundschau—April 11, 1912. No. 32320 D.

Condensers

The Capacity and Phase Difference of Paraffined Paper Condensers as Functions of Temperature and Frequency. Frederick W. Grover. Describes the method of measurement and the results of observations, discussing the theories of absorption, and comparing the observed facts with the theoretical requirements. 15000 w. Bul Bureau of Stand—Dec. 15, 1911. No. 29917 N.

Conduction

On the Conduction of Electricity at Contacts of Dissimilar Bodies. R. H. Goddard. Abstract of an article in the *Phys. Rev.* Gives results of investigations and statement of conclusions. 5000 w. Elect'n, Lond—Aug. 16, 1912. No. 35462 A.

The Convection and Conduction of Heat in Gases. Irving Langmuir. Gives results supporting the theory of the conductive film. 3000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34072 F.

Current Brakes

Electromagnetic Brakes (Ueber Wirbelstrombremsen). F. Niethammer. Considering their applicability to cranes, hoists and other lifting gear. Ills. 2400 w. Elek Kraft u Bahnen—Oct. 24, 1911. No. 28482 D.

Tests on the Pasqualini Brake (Experimentelle Untersuchung der Pasqualini Bremse). J. M. G. Scheffer. Results of experiments with this type of eddy-current brake. 4000 w. Elektrotech u Maschinenbau—Nov. 12, 1911. No. 28843 D.

Counter-current and Short-circuit Brakes on Series-wound Commutators (Gegenstrom- und Kurzschlussbremsung bei Reihenschluss-kommutatormotoren). Paul Müller. Mathematical discussion. 3000 w. Elek Kraft u Bahnen—Nov. 14, 1911. No. 28833 D.

Electrical Braking with Particular Attention to A. C. Commutators (Ueber elektrische Bremsung mit besonderer Berücksichtigung der Wechselstrom-Kommutatormotoren). F. Niethammer and E. Siegel. Discusses in this paper the various brake methods. Serial. 1st part. 4400 w. Elektrotech u Maschinenbau—Dec. 24, 1911. No. 29744 D.

Currents

The Rotating Electric-Current Field. A. E. Kennelly. Abstract of paper read at Turin, Italy. Discusses new quantitative relations bearing on Ferraris' rotating vector theory in relation to electric current flow in two dimensions. 2500 w. Elect'n, Lond—April 19, 1912. No. 32495 A.

Diagrams

The Crank Diagram for Representation of Electrical Power. Albert A. Nims. A comparison of cycle and integral diagrams for showing values of current, voltage and power in alternating-current circuits. 1700 w. Elec Wld—Sept. 28, 1912. No. 36416.

Dielectrics

The Measurement of Dielectric Losses by Means of the Wheatstone Bridge. K. W. Wagner. Abstract translation from *E. T. Z.* Explains method and its application. 700 w. Elect'n, Lond—Dec. 29, 1911. No. 29611 A.

On the Properties of Dielectrics in Alternating Fields. G. L. Addenbrooke. A brief sketch of results obtained in experimental research work. 1200 w. Elect'n, Lond—March 1, 1912. No. 31134 A.

On the Power Factor and Conductivity of Dielectrics When Tested with Alternating Electric Currents of Telephonic Frequency at Various Temperatures. J. A. Fleming and G. B. Dyke. A study. 18000 w. Inst of Elec Engrs—March, 1912. No. 31878 N.

The Law of Corona and Dielectric Strength of Air—II. F. W. Peek, Jr. The second paper of a report of extensive investigations of corona formation and loss. Ills. 5500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34076 F.

Discussion on "Electric Strength of Air—II," "The Law of Corona and Dielectric Strength of Air." Chicago, June 29, 1911. Papers by John B. Whitehead, and by F. W. Peck, Jr., are discussed. 9000 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28207 F.

The Conductivity of Dielectrics. Dr. J. A. Fleming. Gives results of recent investigations of dielectric phenomena. 2000 w. Sci Am Sup—July 20, 1912. No. 34657.

Dielectrics Under Continuous and Alternating Currents (Essais des diélectriques sous des tensions continues et alternatives). F. Laporte and P. de la Gorge. Comparative experiments for determining the tendency toward rupture in cables under differences in potential. Diagrams. 7000 w. Bul Soc Int d'Electriciens—Jan., 1912. No. 31384 F.

The Influence of Frequency on Dielectric Rigidity (Influence de la Fréquence sur la Rigidité diélectrique). P. de la Gorge and P. Girault. Experiments on dielectric solids from increasing the current frequency. 1800 w. Bul Soc Int d'Electriciens—Jan., 1912. No. 31385 F.

Disc-Machines

Direct Measurement of the Losses Due to Air Friction in Unipole-Disc Machines (Direkte Messung der Luftreibungsverluste in Scheiben-Unipolarmaschinen). B. von Ugrimoff and K. Schoenfer. Explains a theory for this determination. Ills. 1500 w. Elek u Masch—Feb. 4, 1912. No. 30528 D.

Double Frequency

A Static Frequency Duplicator. G. Vallauri. Abstract translation from the Italian. Diagrams and description of apparatus. 1000 w. Elect'n, Lond—Jan. 19, 1912. No. 30155 A.

Electric Discharge

Electrical Disturbances and the Nature of Electrical Energy. Charles P. Steinmetz. Reprint from *Gen. Elec. Rev.* Address before the Assn. of Edison Ill. Cos. 5000 w. Sci Am Sup—March 2, 1912. No. 30931.

New Researches on Electric Discharge Phenomena. M. A. von Luttgendorff. Illustrates and describes some experiments with the Ruhmkorff coil. 600 w. Sci Am Sup—Aug. 31, 1912. No. 38653.

Electrodynamics

A Derivation of the Fundamental Relations of Electrodynamics from Those of Electrostatics. Leigh Page. Deduces the fundamental laws of electrodynamics from those of electrostatics. Mathematical. 2500 w. Am Jour of Sci—July, 1912. No. 34368 D.

Electromagnets

Notes on D. C. Magnetic Coils (Untersuchung eines Zugmagneten für Gleichstrom). K. Euler. Mathematical discussion on movable cores. Serial. 1st part. Diagrams. 2800 w. Elek Kraft u Bahnen—Dec. 14, 1911. No. 29734 D.

Operation of Plunger Electromagnets. Charles R. Underhill. Calls attention to conditions which may introduce serious errors by applying the Maxwell formula. 1800 w. Elec Wld—June 22, 1912. No. 3388[illegible]

The Use of Naked Aluminum Wire in Electromagnets. H. F. Stratton. Claims the advantages of reduced cost, reduced weight and higher permissible temperature as compared with insulated copper wire. Ills. 2500 w. Elec Wld—Aug. 24, 1912. No. 35436.

Some Unique Electromagnets. Brief review of the development, illustrating and describing types, and explaining uses. 2500 w. Elec Rev & W Elect'n—Aug. 31, 1912. No. 35680.

Electrons

On the Emission of Electrons by Metals under the Influence of Alpha Rays. H. A. Bumstead. An account of experimental investigations with statement of conclusions. Ills. 4500 w. Am Jour of Sci—Dec., 1911. No. 28715 D.

See also Radioactivity, under *Electro-Physics.*

Electrotechnics

The Properties of Selenium and Their Applications in Electrotechnics. Erich Hausmann. Gives the results of experiments and interesting properties of selenium, and their applications. 2500 w. Sci Am Sup—Jan. 20, 1912. Serial. 1st part. No. 29841.

Evaporation

The Evaporative Capacity of Lead-Lined Copper Coils. B. Viola. A record of three runs from evaporation practice with some general practical conclusions on evaporation. Charts. 1500 w. Met & Chem Engng—May, 1912. No. 32646 C.

Frequency

Frequency. D. B. Rushmore. Discusses the influence of frequency in connection with generators, transformers, transmission lines, lightning, induction motors, synchronous motors, frequency changers, synchronous converters, railroad work, switching phenomena and illumination. 4000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34059 F.

High Frequency Phenomena with Especial Reference to Oscillations and Surges. W. T. Ryan. A practical treatment of high frequency phenomena and explanation of destructive effects on particular occasions. 3000 w. So Elect'n—June, 1912. No. 33405.

Resonant Circuit Frequency Indicator. W. H. Pratt and D. R. Price. Describes the device and its working. 1000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34091 F.

The Distribution of Current and the Variation of Resistance in Linear Conductors of Square and Rectangular' Cross-Section When Carrying Alternating Currents of High Frequency. H. W. Edwards. Abstract of an article in the *Phys. Rev.* Discusses the experimental method adopted. 1800 w. Elect'n Lond—Feb. 9, 1912. No. 30681 A.

Gravitation

An Electrophysical Explanation of Gravitation. Albert C. Crehore. An analysis of the cause of gravitation and comparison with the gravitational constant on the basis of corpuscular rotation. Also editorial. 6000 w. Elec Wld—Feb. 10, 1912. Serial. 1st part. No. 30382.

Harmonic Analysis

The Theory of Harmonic Analysis. Montford Morrison. A graphical treatment of conditions in alternating current circuits. 4000 w. So Elect'n—Dec., 1911. No. 28775.

The Best Form of the Resonance Method of Harmonic Analysis. R. Beattie. Examines the errors to which the resonance method is liable and describes a process for correcting these errors. 3500 w. Elect'n, Lond—April 19, 1912. No. 32498 A.

Heat Transmission

See Electrical Machinery, under *Power Applications.*

Hysteresis

Steinmetz and His Discovery of the Hysteresis Law. Douglas S. Martin. Reviews Charles P. Steinmetz's early work. Ills. 4500 w. Gen Elec Rev—Sept., 1912. No. 35671 C.

The Effect of Temperature Upon the Hysteresis Loss in Sheet Steel. Malcolm Maclaren. Reports investigations and discusses results of various temperatures. 2500 w. Pro Am Inst of Elec Engrs—Oct., 1912. No. 37135 F.

The Hysteresis Loss in Iron Due to a Combined Pulsating and Rotating Magnetic Field. Thomas F. Wall. Describes experiments undertaken to discover whether the two simultaneous hysteresis effects can be superposed without mutual reaction. 2500 w. Elect'n, Lond—Sept. 20, 1912. No. 36483 A.

An Accurate Examination of the Steinmetz Index for Transformer Iron, Stalloy and Cast Iron. F. Stroude. Abstract of a paper read before the Physical Soc. Describes a careful series of determinations of hysteresis loss on these materials. 1000 w. Elect'n, Lond—July 19, 1912. No. 34880 A.

The Cause of Additional Iron Losses in Smooth Spiral Armature Rings (Die Ursache der Zusätzlichen Eisenverluste in umlaufenden glatten Ringankern). J. Wild. Notes on the question of rotary hysteresis. Diagrams. 6000 w. Zeitschr d Ver deutscher Ing—Sept. 7, 1912. No. 36620 D.

Inductance

The Experimental Determination of the Inductance of Linear Conductors. A. C. Jolley and A. F. Burgess. Shows the limitations of Neumann's formula and obtains an expression for two parallel wires as used in high-frequency measurements. Mathematical discussion. 1500 w. Elect'n, Lond—Nov. 24, 19[illegible]. Serial. 1st part. No. 28654 A.

A Method of Measuring Small Inductances. S. Butterworth. Abstract of a paper read before the Phys. Soc. Describes a method in which a single condenser may be used for all values of the self-induction. 500 w. Elect'n, Lond—Aug. 16, 1912. No. 35461 A.

Inductance of Coils. Morgan Brooks and H. M. Turner. Deals with the self-inductance of closely-wound cylindrical coils of wire without iron cores, giving tables and charts for obtaining the approximate inductance or reactance of coils of all dimensions. 72 pages. Univ of Illinois, Bul 53—Jan. 8, 1912. No. 31298 N.

Formulas and Tables for the Calculation of Mutual and Self-Inductance. Edward B. Rosa and Frederick W. Grover. A collection of all formulas which the writers have found of value in the calculation of mutual and self-inductance, particularly in non-magnetic circuits of low enough frequency to insure uniform distribution of current. 230 pages. Bul Bureau of Stand—Jan. 1, 1912. No. 31432 N.

The Theory of Induction Coils (Zur Theorie des Funkeninduktors). R. Hiecke. Presenting a theory of the electrical action in coils. 6800 w. Elek u Masch—Jan. 28, 1912. No. 30525 D.

Lightning

See same heading, under *Transmission.*

Magnetic Models

Making Models of the Magnetic Field. Nathan C. Johnson. Illustrated description of method of fixing iron filings with plaster-of-Paris. 1800 w. Sci Am—Sept. 7, 1912. No. 35781.

Magnetic Properties

The Magnetic Properties of Iron at Frequencies of 200,000 per Second. E. F. W. Alexanderson. Abstract of an article in *Elektrotech. Zeit.* Experimental investigations to determine iron losses and saturation limits in high-frequency machines. 1800 w. Elect'n, Lond—Feb. 23, 1912. No. 31020 A.

Magnetic Properties of Iron at Frequencies Up to 200,000 Cycles. E. F. Alexanderson. Describes measurements of magnetization, core loss and skin effect of iron at high frequencies. 2500 w. Pro Am Inst of Elec Engrs—Dec., 1911. No. 28795 F.

Discussion on "Magnetic Properties of Iron at Frequencies up to 200,000 Cycles." New York, Nov. 13, 1911. Discusses E. F. Alexanderson's paper on this subject. 2500 w. Pro Am Inst of Elec Engrs—Jan., 1912. No. 29946 F.

The Magnetic Properties of Stalloy. H. R. Hamlen and A. L. Rossiter. Abstract of paper read before the Roy. Soc. of Victoria. Experimental investigation not only with direct current, but with alternating currents of varying frequencies. 1200 w. Elect'n, Lond—Nov. 3, 1911. No. 28021 A.

The Magnetization of Cobalt as a Function of the Temperature, and the Determination of Its Intrinsic Magnetic Field. W. W. Stifler. Abstract from *Phys. Rev.* Reports an investigation to determine the specific intensity of magnetization at various temperatures. 800 w. Elect'n, Lond—March 29, 1912. No. 31880 A.

Poynting's Theorem and the Equations of Electromagnetic Action. W. S. Franklin. Reduces the usual expression of Poynting's Theorem and the usual equations of electromagnetic wave motion to familiar expressions involving voltage and current. 1200 w. Jour Fr Inst—Jan., 1912. No. 29923 D.

The Magnetic Transition Temperature of Cementite. S. W. J. Smith, W. White, and S. G. Barker. Determines the temperature at which cementite (carbide of iron) loses its ferromagnetism, and gives examples to show the possibility of using the thermomagnetic properties of cementite to determine whether the substance is present in any iron-carbon alloy. 800 w. Elect'n, Lond—Feb. 9, 1912. No. 30682 A.

The Magnetic Properties of Nickel and Manganese Steels (Ueber die magnetischen Eigenschaften von Nickel- und Manganstahlen). S. Hilpert, E. Colver-Glauert, and W. Mathesius. General data and results of experiments of varying grades. Ills. 5600 w. Stahl u Eisen—Jan. 18, 1912. No. 30508 D.

Researches on the Demagnetizing of Steel by Heat Treatment (Expériences sur la Désaimantation des Aciers au Chauffage). Felix Robin. Curves and results obtained in studying the action of magnetized steel at varying temperatures up to the limiting temperature of 720 degrees. 7200 w. Mem Soc Ing Civ de France—June, 1912. No. 36662 G.

Comparative Studies on Magnetic Measurement (Recherches Relatives aux Mesures Magnétiques). R. Jouast. Comparisons on the results furnished by the Picou Permeameter and other methods. Tables and Diagrams. 10000 w. Bul Soc Int d'Electriciens—Feb., 1912. No. 31401 F.

Tests for the Absolute Determination of the Magnetization of Dynamo Sheets in Epstein Coils (Verfahren zur absoluten Bestimmung der Magnetisierung von Dynamoblech an Epstein-Bündeln). E. Gumlich and W. Rogowski. Presenting a curve theory for this determination. Serial. 1st part. 2800 w. Stahl u Eisen—March 14, 1912. No. 32007 D.

Oscillations

A Summary of the Theory of the Production of Electric Oscillations. Aage S. M. Sörensen. Abstract of a paper read before the Newcastle Sec. of the Inst. of Elec. Engrs. Abstract of the principles of arc and spark oscillators. 2000 w. Elect'n, Lond—Feb. 23, 1912. No. 31021 A.

The Production of Electrical Oscillations by Spark-Gaps Immersed in Running Liquids. W. H. Eccles and A. J. Makower. Read before the British Assn. Describes experiments. The voltage required is lower than in air. 1500 w. Elect'n, Lond—Sept. 13, 1912. No. 36916 A.

A New Method of Impact Excitation of Undamped Oscillations. E. L. Chaffee. From Pro. Am. Acad. of Arts and Sciences. Discusses the general characteristics of a new oscillation gap, and giving applications. Ills. 2500 w. Elect'n, Lond—April 26, 1912. No. 32830 A.

The Movement of Tension Waves and High-Frequency Oscillations in Electrical Distributing Net-Works (Ueber die Fortbewegung von Spannungswellen und Hochfrequenzschwingungen in elektrischen Verteilungsnetzen). G. Giles. Theories by the author and mathematical conclusions. Diagrams. 2700 w. Elek u Masch—July 21, 1912. No. 35555 D.

See also Oscillograms, under *Communication.*

Physiological Effects

The Physiological Effects of Electric Currents (Sur les effets physiologiques des courants électriques). Dr. Weiss. Reports a series of tests. 7000 w. Bull Soc Int des Electriciens—Aug., 1911. No. 29805 N.

Experimental Work on the First Care of Victims of Electric Shocks (Expériences sur l'électrocution effectuées au laboratoir central d'électricité par la commission chargée d'élaborer le texte de l'instruction sur les premier soins a donner aux victimes des accidents électriques). M. Zacon. Report of the commission. Ills. 57 pages. Bull Soc Int des Electriciens—Aug., 1911. No. 29806 N.

Radioactivity

The Gif Laboratory for Radio-Active Examinations. M. Jacques Danne, in *Le Génie Civil.* Describes a novel institution, near Paris, designed especially for technical work. 2000 w. Sci Am Sup—April 20, 1912. No. 32176.

A Discussion of Radio-Chemistry. Harry C. Jones. Discusses radioactive phenomena and the effect of recent advances upon science and the industries. 6500 w. Eng & Min Jour—June 8, 1912. No. 33616.

On the Emission of Electrons by Metals Under the Influence of Alpha Rays. H. A. Bunstead and A. G. McGougan. Report of investigations and results. 7000 w. Am Jour of Sci—Oct., 1912. No. 36973 D.

The Distribution of the Active Deposit of Radium in an Electric Field. E. M. Wellisch and H. L. Bronson. Gives results of a series of experiments undertaken to study the distribution of activity on the electrodes and how it was affected in an electric field. 6000 w. Am Jour of Sci—May, 1912. No. 33095 D.

Radioactivity in Its Relation to Plant Life (La Radioactivite dans ses Rapports avec la Biologie Végétale). Paul Becquerel. The theory of plant stimulation; the action of Becquerel rays on bacteria, grains, etc., and the influence of emanations upon vegetable life. 8500 w. Rev Gen des Sciences—Aug. 15, 1912. No. 36193 D.

Reactance

Synchronous and Asynchronous Reactance. J. Rezelman. Deals with the reactance of a single-phase high frequency alternator. Ills. 2000 w. Elect'n, Lond—June 7, 1912. No. 33775 A.

Rectifiers

Theory of the Operation of Mercury Rectifiers. R. P. Jackson. Explains the theory of the mercury rectifier. 3000 w. Elec Jour—June, 1912. No. 34047.

A New A. C. Rectifier (Sur un Nouveau redresseur des courants alternatifs). De Kermond. Description of a new device for damping vibratory movement. 1600 w. L'Électricien—Nov. 4, 1911. No. 28848 D.

See also same heading, under STREET AND ELECTRIC RAILWAYS.

Relativity

The Principle and Mechanics of Relativity (Le Principe de Relativité et la Mécanique). E. M. Lémeray. Studies on the Lorentz theory of electrons. 8500 w. Rev Gen des Sciences—March 15, 1912. No. 32090 D.

Resistance

Simplification of Electro-Thermal Calculations; the Watt and Thermal Ohm. Carl Hering. A discussion of units of thermal resistance, pointing out their most rational values and urging general adoption. 3500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34064 F.

Simplifying Some Thermal Calculations by the Use of the Thermal Ohm. Carl Hering. Aims to show how, by the adoption of a new unit for a quantity for which no unit has existed, the mental labor in a certain class of calculations can be greatly reduced. 3500 w. Jour Fr Inst—Dec., 1911. No. 28790 D.

Flow of Heat Through Contact Surfaces. Carl Hering. Gives the values of the flow of heat through surfaces of contact between bodies and their equivalent thermal resistances, collected from various sources and reduced to watts and thermal ohms. 5000 w. Met & Chem Engng—Jan., 1912. No. 29312 C.

Variation of the Electrical Resistance of Oxides with Temperature. A. A. Somerville. A study of resistance as a function of temperature of the oxides. 500 w. Met & Chem Engng—July, 1912. No. 34176 C.

The Heating Effect of the Currents in Precise Measurements of Electrical Resistance. R. T. Glazebrook, W. R. Bousfield, and F. E. Smith. Report of experimental investigations with conclusions. 1500 w. Elect'n, Lond—Jan. 5, 1912. No. 29663 A.

Pressure Coefficients of Electrical Resistance. A. A. Somerville. Explains uses to which powdered resistors have been applied and the changes with pressure. 700 w. Elec Wld—May 25, 1912. No. 33158.

To Measure an Alternating-Current Resistance and Compare It with the Direct-Current Resistance — Electro-Dynamometer Method. Edwin F. Northrup. Describes method. 2000 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34855 F.

Practical Calculations on the Distribution of Energy by Continuous Current (Calcul pratique des distributions d'énergie par courant continu). Ch. Vallet. Mathematical discussion. Serial. 1st part. 3200 w. L'Electricien—Aug. 10, 1912. No. 35567 D.

Incandescent Lamps as Resistances. T. H. Amrine. Emphasizes their value and gives information regarding the resistance characteristics, ranges of resistance and current carrying capacities available and other information. 1500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34090 F.

Electric Resistance of Special Steels (Résistance Électrique des Aciers Spéciaux). O. Boudouard. Studies on the resistance of carbon, nickel, manganese, chrome and tungsten steels after the methods of Kelvin and Carpentier. 3000 w. Rev de Metall—April, 1912. No. 32089 H.

The Resistance of Iron in Alternating Currents (Sur la Résistance du Fer en Courant Alternatif). M. E. Brylinski. Mathematical discussion on the resistance and self-induction of iron. Diagrams. 13600 w. Bull Soc Int d'Électriciens—March, 1912. No. 32083 F.

Shunt Coils

Changing the Size of Wire on Shunt Coils. Alan M. Bennett. States results to be obtained by such changes and considers the rule governing the effect produced. 1500 w. Elec Wld—Aug. 3, 1912. No. 35064.

Spark Gaps

The Study of Spark Gaps with Alternating Currents (L'Étude des distances explosives avec les courants alternatifs). Considering the influences of humidity and temperature. Diagrams. 2000 w. Génie Civil—Jan. 27, 1912. No. 30623 D.

See also Oscillations, under *Electro-Physics.*

Tesla Coil

An Easily Constructed Tesla Coil. Allan S. Dana. Instructions for the amateur electrician. Ills. 1000 w. Sci Am Sup—Jan. 27, 1912. No. 30063.

Thermopiles

A Bismuth-Silver Thermopile. W. W. Coblentz. An illustrated account of experimental work and results. 2000 w. Jour Fr Inst—Dec., 1911. No. 28789 D.

Ultra-Violet Rays

Ultra-Violet Rays and their Practical Applications (Les Rayons Ultra-Violets et leurs Applications Pratiques). Daniel Berthelot. Discusses at length the characteristics of the rays and their uses in lighting, medicine and water purification. Ills. 37200 w. Mem Soc Ing Cir de France—Dec., 1911. No. 31389 G.

See also Sterilization, under CIVIL ENGINEERING, *Water Supply.*

Vector Diagrams

A. C. Vector Diagrams. C. C. Hawkins. Shows there is a want of clearness in the minds of students as to the meaning of vector diagrams, according to whether the resultant is the diagonal of a parallelogram or the closing side of a triangle. 2000 w. Elect'n, Lond—March 15, 1912. No. 31521 A.

The Vector Diagram of the Single-Phase Repulsion Motor. Thomas F. Wall. Develops the vector diagram and compares the results with those obtained by the analytical method, showing the latter to be more accurate. 3000 w. Elect'n, Lond—April 12, 1912. No. 32256 A.

A Study of Polyphase Relations by a solution of various problems, giving the vector relations for each case. 2000 w. So Elect'n—May, 1912. No. 32638.

A Vector Calculator. F. Addey. Explains a calculator used for telephone calculations, and similar problems. 500 w. Elec Rev, Lond—Jan. 26, 1912. No. 30296 A.

Voltage Impulses

Propagation of Impulses Over a Transmission Line. J. H. Cunningham and C. M. Davis. Report of investigations. Ills. 2500 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33247 F.

GENERATING STATIONS

Accumulator Charging

Three-Way Accumulator Charging without Using a Special Switch (Ein Beitrag zur Dreireihenladung der Akkumulatorenbatterien ohne Verwendung eines Spezialschalters). R. Edler. Illustrates and describes method. Serial. 1st part. 3600 w. Elek u Masch—July 14, 1912. No. 35553 D.

Accumulators

On the Efficiency of Accumulators. W. Hibbert. Gives account of experiments on methods of increasing the efficiency of accumulators. 1200 w. Elec Rev, Lond—Jan. 5, 1912. No. 29657 A.

Stationary Accumulator Practice. F. P. Kneeshaw. Read before the Elec. Assn. of N. S. W. Outlines points frequently overlooked in connection with the installation and maintenance of stationary batteries. 4000 w. Aust Min Stand—July 4, 1912. No. 35183 B.

Volume Changes in Accumulator Electrodes. C. Toone. Gives studies of working changes in the volume of accumulator plates. 900 w. Elec Rev, Lond—March 22, 1912. No. 31720 A.

The Technique of Stationary and Portable Accumulators (État Actuel de la Technique des Accumulateurs Stationnaires et Transportables). Dr. H. Beckmann. Paper before the International Congress at Turin. 8000 w. Rev d'Électrochimie —Oct. 1911. No. 28509 F.

Alkaline Nickel-Iron Accumulators (L'Accumulateur alcalin fer-nickel). J. A. Montpellier. Presents advantages of the Edison and Gouin types over the lead accumulators. Two parts. 4800 w. L'Électricien—Jan. 20, 1912. No. 30606 D.

Regeneration of Sulphated Storage Cells. Dale S. Cole and C. W. Bennett. An account of cells tested and treated by the method outlined by G. A. Perley in a recent article. 1500 w. Sib Jour of Engng—May, 1912. No. 33204 C.

The Manufacture and Performance of the Edison Storage Battery. Howard Lyon. Reproduced from the *Jour. of Ind. Chem.* 3500 w. Sci Am Sup—Jan. 6, 1912. No. 29853.

The New Edison Accumulator (Der neue Edison-Akkumulator). Herr Dierfeld. Description of new cells and a review of their properties. Ills. 2500 w. Glaser's Ann—May 15, 1912. No. 33526 D.

Buffer Tests with Pirani and Lancashire Motors (Pufferversuche mit Pirani-und Lancashire-Maschinen). L. Schröder. Series of diagrams showing results of such tests. 4000 w. Elektotech u Maschinenbau—Dec. 24, 1911. No. 29745 D.

See also Cells, under *Electro-Chemistry;* and Accumulator Traction, under STREET AND ELECTRIC RAILWAYS.

Boosters

Reversible Boosters. C. Turnbull. Considers some of the problems and the beneficial use of batteries. 2000 w. Elec Rev —March 15, 1912. No. 31518 A.

Automatic Reversible Battery Boosters. R. Rankin. Abstract of paper read before the Inst. of Elec. Engrs. An account of their uses and advantages, classifying and describing systems, etc., explaining principles and comparing types. 2000 w. Elect'n, Lond—Nov. 24, 1911. Serial. 1st part. No. 28655 A.

Central Stations

Central Station Design. Irving E. Moultrop. Deals with an electricity supply station furnishing energy for lighting and commercial power, and refers particularly to the L St. Station of the Edison Co. of Boston. 6500 w. Stevens Ind—Oct., 1912. Serial. 1st part. No. 30003 D.

Prime Movers for Central Stations. Edwin D. Dreyfus. Read before the Assn. of Ir. & St. Elec. Engrs. Reviews some of the elements of cost of producing mechanical energy and its conversion into electric current, which affect the economy. 6000 w. Elec Jour—Jan., 1912. No. 30012.

Some Problems in Central Station and Substation Operation. C. W. Stone. Under central station questions are considered excitation, and means of limiting trouble at times of short circuit; under substations, considers the relative advantages of synchronous converters and motor-generator sets. 4000 w. Gen Elec Rev—June, 1912. No. 33373 C.

Notes on the Economical Operation of Small Central Stations. H. H. Stephens. Read before the Oklahoma Gas, Elec., & economies. 1200 w. Elec Rev & W Elect'n—June 29, 1912. No. 34140.

Steam in Central Station Use. Newton Harrison. A study of the different kinds of steam and heat it contains, with related information. 3000 w. Cent Sta—July, 1912. No. 34416.

Economical Steam Generation in Central Station Plants. George H. Gibson. A discussion of conditions favorable to the use of economizers. Ills. 3000 w. So Elect'n—Aug., 1912. No. 34982.

The Manufacture of Artificial Ice as a Central-Station By-Product. Sydney F. Walker. Describes ice-making processes that may be used in connection with electric central-station operation. 4000 w. Elec Wld—Feb. 3, 1912. No. 30263.

The Future of the Central Station (L'Avenir des Centrales Génératrices d'Électricité). H. Marchand. Discussion of the chief phases in the development of electric power. 9000 w. Rev. Gen. des Sciences—Oct 15, 1911. No. 28487 D.

The New Electric Regime in Paris. Jacques Boyer. Describes the physical features of the sub-stations and distributing system. Second article of a series. Ills. 4000 w. Engineering Magazine—Dec., 1911. No. 28388 B.

Conditions, Practice and Developments in English Central Stations. Cecil Toone. The present article discusses boiler house practice and fuel economics. 1200 w. So Elect'n—Nov., 1911. No. 27979.

Steam Driven Electric Plants (Mit Dampf betriebene elektrische Kraftwerke) Oskar Bühring. Review of the growth and costs of some German power stations within a period of ten years.

3500 w. Elek Kraft u Bahnen—May 4, 1912. No. 33531 D.

Berlin's Power Plants (Ueber Berliner Kraftwerke). H. Hanszel. A review of St. Ry. Assn. Calls attention to possible the electric generating stations in and around Berlin at the end of the year 1911. Ills. Serial. 1st part. 2400 w. Zeit d Oest Ing u Arch Ver—May 31, 1912. No. 33567 D.

Some Notes on European Three-Phase Gas-Engine Plants. Warren H. Miller. Brief illustrated description of gas-engine-driven central stations of from 2000 kw. to over 40,000 kw. in Germany. 2500 w. Elec Wld—Dec. 2, 1911. No. 28597.

Power System of the Pacific Mills. Illustrated description of a central turbine condensing station to distribute power electrically to the mills. 2500 w. Power—Jan. 2, 1912. No. 29818.

Power System of the Pacific Mills. Abstract of a paper by Fred A. Wellen, describing the recently installed power system to supply electric current to the mills at Lawrence, Mass. 2000 w. Jour Am Soc of Mech Engrs—March, 1912. No. 31567 D.

An Oil-Engine Central Station. Gives details of unit costs, repairs, etc., of 755-h.p. plant in operation six years at Lebanon, Ind. Ills. 2000 w. Elec Wld—Dec. 2, 1911. No. 28593.

Large Southern Central Stations. D. J. O'Brien. Illustrates and describes the combination steam-turbine and reciprocating-engine plant supplying light and power to Birmingham, Ala. 1500 w. Power—March 26, 1912. No. 31515

Commercial Electrical Apparatus for 100,000-Volt Service. S. Q. Hayes. Abstract of paper read at the Turin Congress. Gives details of transformers, condenser type terminals, oil circuit-breakers and lightning arresters. 2500 w. Elect'n, Lond—March 15, 1912. No. 31520 A.

Lake Shore Station of Cleveland Electric Illuminating Company. Illustrated description of a station illustrating good modern practice. 1800 w. Elec Wld—March 30, 1912. No. 31704.

Largest Central Station in the State of Kansas. Illustrated description of a modern turbine generating plant of 8,000 kw. rating, at Wichita, Kan. Also editorial note. 2500 w. Elec Wld—May 25, 1912. No. 33152.

Chicago's Latest Generating Station. H. H. Norris. Illustrated detailed description of the Commonwealth Edison Co.'s Northwest Station, designed for ultimate equipment of 240,000 kw. 3000 w. Elec Wld—Oct. 5, 1912. No. 36587.

New Power Station of the Utah Light & Railway Company. Illustrated description of the new station on the Jordan River. A special feature is a 2000 kw. water rheostat. 4000 w. Elec Ry Jour—Nov. 4, 1911. No. 27709.

The Deptford Generating Station. Outlines the early history of this station and a description of the present high-tension station. 1700 w. Engng—Aug. 2, 1912. No. 35201 A.

Deptford Generating Station of the London Electrical Supply Corporation, Ltd. Reviews the history of this station and illustrates and describes its present equipment. 3500 w. Elec Rev, Lond—Aug. 9, 1912. No. 35287 A.

Generating Energy at Coal Mines. Illustrated description of the Chignecto plant of the Maritime Coal, Railway & Power Co., Ltd., of Amherst, Nova Scotia. Energy is generated from waste fuel at the pit mouth, and transmitted to neighboring towns, mines and quarries at 11,000 volts. 2500 w. Elec Wld—Sept. 28, 1912. No. 36414.

An Office Building Central Station. A. R. Maujer. Illustrated description of the Story Building plant in Los Angeles, using oil fuel. It is laid out to furnish outside buildings with current, exhaust and live steam and water pressure for elevator service. 1800 w. Power—Nov. 14, 1911. No. 27992.

Centralization of Heat, Light and Power for the University of Toronto. J. C. Murton. Illustrated description of the recent installation at the University of Toronto for supplying light, heat and power to some 24 buildings. 3000 w. Ap Sci—Nov., 1911. No. 28274 C.

The Mark Power Plant (Das Märkische Electrizitätswerk). G. Klingenberg. Description of this plant near Berlin. Ills. Serial. 1st part. 4000 w. Zeit des Ver Deutscher Ing—Dec. 23, 1911. No. 29763 D.

The First Long Distance Central Station in the Duchy of Luxemburg (Das erste Ueberlandkraftwerk in Grossherzogtum Luxemburg). J. P. Manternach. Describes plant and country operated over. Maps. 2400 w. Elek Kraft u Bahnen—Jan. 4, 1912. No. 30581 D.

The Leyden Power Plant (De Leidsche Electriciteitsfabriek). E. J. F. Thierens. Description of equipment of plant, its capacity, etc. 6000 w. Ills. De Ingenieur—July 6, 1912. No. 35565 D.

The New Przemysl Electric Plant (Das neue Elektrizitätswerk Przemysl). August Block. Describes machine installations, and the services required of this

Austrian plant. Ills. 3600 w. Elek u Masch—Sept. 1, 1912. No. 36646 D.

See also Power Plants, and Reconstruction, under *Generating Stations;* Central Plants, and Ice Making, under MECHANICAL ENGINEERING, *Heating and Cooling;* Electrification, under RAILWAY ENGINEERING, *Motive Power and Equipment,* and Boston Elevated Ry., under STREET AND ELECTRIC RAILWAYS.

Combination Plant

A Combination Lighting, Heating and Ice Plant at Louisville, Ky. Illustrated description of modern practice in a 700 kw. station. 1800 w. Elec Wld—March 2, 1912. No. 30993.

Costs

The Relative Costs and Operating Efficiencies of Polyphase and Single-Phase Generating and Transmitting Systems. H. M. Hobart. A comparative study. 9500 w. Pro Am Inst of Elec Engrs—Feb., 1912. No. 30828 F.

Discussion on "Relative Costs and Operating Efficiencies of Polyphase and Single-Phase Generating and Transmitting Systems." Discussion on the paper by H. M. Hobart, at Boston, Mass., Feb. 21, 1912. 10,500 w. Pro Am Inst of Elec Engrs—Oct., 1912. No. 37136 F.

A Method of Studying Power Costs with Reference to the Load Curve and Overload Economies. George I. Rhodes. Discusses the relation of load factor to operating power costs. 3500 w. Pro Am Inst of Elec Engrs—Feb., 1912. No. 30826 F.

Discussion on "A Method of Studying Power Costs with Reference to the Load Curve and Overload Economics." Discussion at New York, Feb. 9, 1912, of paper by George I. Rhodes. 5000 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34871 F.

Central Station Generation of Power at Mining Centers. J. V. Hunter. Considers fuel costs mainly limiting the discussion to coal, or lignite, and giving an approximate estimate. 3000 w. Pro Am Inst of Elec Engrs—Dec., 1911. No. 28797 F.

Discussion on "Central Station Generation of Power at Mining Centers," Ft. Wayne, Ind., Feb. 2, 1912. Paper by J. V. Hunter is discussed. 2500 w. Pro Am Inst of Elec Engrs—March, 1912. No. 31584 F.

Cost Figuring in an Electrical Plant. H. F. MacLane. Explains that part of cost keeping which deals with compiling the cost of the apparatus manufactured. 6000 w. Am Mach—Feb. 8, 1912. No. 30278.

The Cost of Generating Electrical Power in Small Plants. Gives calculations for a typical case. 2200 w. So Elect'n—June, 1912. No. 33406.

Cost and Efficiency of Alternating versus Direct Current Motors for Steel Mill Auxiliaries. B. R. Shover and Edward J. Cheney. Gives comparative figures for first cost and annual costs of two systems for modern steel mill drive, with details of methods of estimating. 6000 w. Gen Elec Rev—Aug., 1912. No. 34953 C.

Economy

Economy Factors in Power Plants. Charles Brossmann. From a paper before the Indiana Engng. Soc. Considers small things which seriously affect the economy. 1200 w. Power—April 16, 1912. No. 31975.

Current Supply from Hydroelectric Plants (Stromversorgung aus Wasserkraftwerken). Emil Frey. Reviews the resources from electric generating stations. 5500 w. Elek Kraft u Bahnen—June 4, 1912. No. 34520 D.

Efficiency

Induction Motor Drive Plant Efficiency. H. W. Young. Explains the use of the graphic recording watt-meter for raising the power factor and increasing the efficiency. 1500 w. Ind Engng—April, 1912. No. 31978 C.

Plant Efficiency—Turbine to Meter. Reviews a paper by J. D. Ross reporting tests conducted to determine losses. 2500 w. Can Elec News—Oct., 1912. No. 36430 C.

England

Electrical Development in Stratford-on-Avon. Illustrated description of an interesting gas engine plant. 2000 w. Elec Rev, Lond — Feb. 23, 1912. No. 31018 A.

Rotherham Electric Light, Power and Tramways Undertaking. Describes the extension and arrangement of the plant, and gives information related. Ills. 2000 w. Elec Rev, Lond—July 26, 1912. No. 35143 A.

Electricity Supply at Bradford. Describes some of the features of interest in connection with the plant. Also editorial. Ills. 5000 w. Elect'n, Lond—Oct. 11, 1912. No. 36917 A.

Equipment

See Testing Methods, under *Measurement.*

Exciters

Exciters and Different Exciter Arrangements for Large Generating Stations. E. A. Lof. Recommendations for the design, installation, and operation of exciter plants. 3000 w. Gen Elec Rev—Oct., 1912. No. 36434 C.

Extensions

Extension of the Redondo Stations of the Pacific Light & Power Co. Illustrated account of an addition to the boiler plant and remodeling of condenser circulating-water system. 2500 w. Elec Wld—June 15, 1912. No. 33735.

Fireproof Compartments

Bus and Switch Compartments for Power Stations. Emil Bern. Discusses designs of fireproof compartments for medium high voltage apparatus. Ills. 1200 w. Gen Elec Rev—Aug., 1912. No. 34956 C.

Floods

Norwich Electricity Works and the Flood. Illustrated account of the especially severe inundation of Aug. 26, 1912, and the damage at the Norwich station which was in an upset state due to important extensions in progress. 3000 w. Elec Rev, Lond—Sept. 13, 1912. No. 36248 A.

Germany

Modern German Electrical Plant. Prof. G. Klingenberg. Reprint from an article in *Zeit. des Ver. Deut. Ing.* Illustrated description of a 10,000-kw. plant on the Finow Canal, near Berlin. 1800 w. Power —March 5, 1912. No. 31000.

Hydro-Electric

Water Power Development. A brief prepared by the public policy committee and advisory members of the A. I. E. E. and presented at the public hearing before the U. S. National Waterways Commission, Washington, D. C., Nov. 21, 1911. 2500 w. Pro Am Inst of Elec Engrs—Dec., 1911. No. 28798 F.

Hydro-Electric Power Plants. W. F. Marshall. Read before the Victorian Inst. of Elec. Engrs. Considers various problems in connection with their development. 3000 w. Aust Min Stand—Nov. 2, 1911. No. 28940 B.

Recent Developments in Hydroelectric Engineering in the Northwest. C. A. Tupper. Presents data gathered during a recent trip. Illustrated description of the system of the Great Northern Power Co. Ills. 2500 w. So Elect'n—Jan., 1912. No. 29638.

Recent Hydro-Electric Development, and the Probable Course of Future Progress. David B. Rushmore. Gives statistics showing the possibilities in the United States, and reviews recent progress. Ills. 3000 w. Gen Elec Rev—June, 1912. No. 33370 C.

Plant Efficiency. J. D. Ross. An analysis of the losses of a hydro-electric system at Seattle. 2500 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33234 F.

Considerations Concerning the Construction of the Generators for a Siemens-Schuckert Hydro-Electric Plant (Considerazioni intorno alla costruzione dei generatori per impianti idro-elettrici della società Siemens-Schuckert). Buclata. General review. Ills. Serial. 1st part. 2000 w. Industria—July 21, 1912. No. 35595 D.

The Necessity for State Development of Water Power. F. H. Macy. Shows that to check the drain on the coal reserves it is necessary to utilize the undeveloped water power. 2000 w. Cornell Civ Engr—Oct., 1912. No. 37022 C.

Development and Operation of Water-Power Plants. Warren Aikens. Explains the advantages to be gained by operating a system of hydro-electric plants connected in parallel, and exchanging power from one plant to another. Ills. 2500 w. Min & Engng Wld—Sept. 28, 1912. No. 36417.

Hydroelectric Development of the Salt River Project. Illustrated description of the Roosevelt dam and power plant, the transmission line, switching stations, and pumps. 4500 w. Elec Rev & W Elect'n—Dec. 30, 1911. No. 29246.

Power Development on Trent Canal. A. H. Hull and K. R. McKinnon. An account of government dams being utilized for electric power purposes, giving illustrated description of the plant at No. 2. Ills. 6500 w. Can Elec News—June, 1912. No. 33650 C.

A Hydroelectric Plant for Construction Work. O. H. Ensign. Illustrated description of the plant at the Boise Division dam for operating the construction plant for building a large dam at Arrowrock. 1700 w. Eng Rec—Aug. 24, 1912. No. 35425.

Enlargement of the Coquitlam-Buntzen Hydroelectric Power Development. Charles A. Lee. Details of work in British Columbia, including the enlargement of 2½ miles of tunnel without interrupting the flow. Ills. 7000 w. Eng Rec—Sept. 21, 1912. No. 36054.

The Coleman Hydroelectric Development on Battle Creek, California. Illustrated description of a 20,000-h.p. plant supplied by ten miles of earth canal. 3000 w. Eng Rec—Dec. 16, 1911. No. 28988.

New Hydroelectric Plant of Northern California Power Co. Rudolph W. Van Norden. Illustrated detailed description of the Coleman plant, part of a system delivering energy at 66,000 and 22,000 volts over nearly 400 miles of lines. 2500 w. Elec Wld—Feb. 3, 1912. No. 30262.

Developing Electrical Energy from the Los Angeles Aqueduct. Howard S. Knowlton. Illustrates and describes the plans for establishing a large hydroelectric system in connection with this new 23000000-dollar water system. 5500 w. Elec Wld—Feb. 10, 1912. No. 30381.

Water Power on the Los Angeles Aqueduct. Explains conditions affecting hydroelectric development at six stations. Map. 3000 w. Eng Rec—Feb. 3, 1912. No. 30255.

The San Joaquin Hydro-Electric Power Installation. F. C. Perkins. Illustrated description of this development in southern California. 1500 w. Sci Am Sup—July 6, 1912. No. 34289.

New San Joaquin Power Plant. Howard H. Bliss. Illustrated description of a 16,000 k. w. hydroelectric plant. 1200 w. Power—July 16, 1912. No. 34451.

The Hydro-Electric Development of the Great Western Power Company. H. P. Rust. Map and illustrated description of the Big Bend development of this California company. Also discussion. 12500 w. Pro Brooklyn Engrs' Club—Jan., 1912. No. 35484 N.

Hydro-Electric Power in California Oil Fields. Warren Aikens. Illustrated detailed description of development thus far attempted. 4000 w. Min & Engng Wld —Oct. 26, 1912. No. 37046.

The White River Development of the Pacific Coast Power Company. Illustrated description of a 36,000 h. p. plant operating under a head of 440 ft. and having sufficient storage to supply full power for a month. 3500 w. Eng Rec—April 13, 1912. No. 31950.

The White River Power Development in Washington. Illustrated detailed description of a development adding 36,000 h. p. and an enormous storage capacity. 3000 w. Eng News—April 11, 1912. No. 31941.

The Pacific Gas and Electric Co. A. R. Maujer. Illustrated description of a development comprising 12 hydro-electric stations and 3 steam plants, having a generating capacity of over 131,000 kw. 2500 w. Power—May 21, 1912. No. 32959.

Development Along Puget Sound. Illustrated description of the hydroelectric system of the Puget Sound Traction, Light & Power Co. on the Snoqualmie, Puyallup, and White rivers. 10500 w. Elec Wld—June 1, 1912. No. 33426.

The Municipal Plant at Seattle. Illustrated description of the 11000-kw. hydroelectric development on Cedar River and auxiliary 1500-kw. water-power station in Seattle. 3500 w. Elec Wld—June 1, 1912. No. 33427.

Developments on Spokane River, Wash. Illustrated description of plants of the Washington Water Power Co., showing the utilization of the hydraulic resources of a single stream. Also editorial. 4000 w. Elec Wld—June 22, 1912. No. 33886.

Electricity in Northwest Washington. Illustrates and describes the generating and distribution system of the Whatcom Co. Ry. & Lght. Co. of Bellingham, Wash. 5000 w. Elec Wld—July 20, 1912. No. 34694.

System of the Pacific Power & Light Co. Illustrated description of numerous small generating stations operated in multiple on a 66000-volt line in Washington and Oregon. 4500 w. Elec Wld—Sept. 14, 1912. No. 35972.

Hydroelectric Plant at Estacada, Ore. Illustrates and describes the new generating plant of the British Railway, Light & Power Co. on Clackmas River. 3000 w. Elec Wld—July 13, 1912. No. 34440.

A New Hydroelectric Plant in Oregon. Extracts from a paper by Herman V. Schreiber, read before the Nat. Assn. of Cement Users. Describes a plant on the Clackamas River, 40 miles east of Portland, having a concrete dam and power house built on fissured volcanic rock foundations, made solid by grouting. Ills. 4500 w. Eng Rec—March 2, 1912. No. 31481.

Hydro-Electric Installation in the Coeur d'Alenes. George Huston. Describes this mining region in Idaho, its stability, the power service, etc. Ills. 1800 w. Min & Engng Wld—Feb. 3, 1912. No. 30244.

Developing a Unique Idaho Water-Power. Illustrated description of the harnessing 181-foot head of the "Thousand Springs" beneath lava outflow, and construction of 3,000 h. p. plant. 600 w. Elec Wld—July 6, 1912. No. 34284.

Developments of the Great Falls Power Company. Illustrated description of plant on Missouri River, near Great Falls, Mont., generating 21,000 k. w. and transmitting energy 152 miles at 102,000 volts to mines at Butte and Anaconda. 3000 w. Elec Wld—July 6, 1912. No. 34283.

Pioneer Power Company of Western Mining Districts. Warren Aikens. Reviews the development of the Telluride Power Co. Ills. 3000 w. Min & Engng Wld—Oct. 5, 1912. No. 36589.

Preliminary Project for a Water Power Installation at Duck Creek Chain of the Rock Island Rapids of Mississippi River. Charles W. Durham. Describes a project, estimated to cost about $10,000,000, submitted by the Great Northern Development Co., of Duluth, Minn. Ills. 2000 w. Engng & Con—Oct. 9, 1912. No. 36765.

Water Power from the Au Sable River. Illustrated description of a 9000 h. p. plant in Michigan that transmits 140,000 volts. 2500 w. Eng Rec—Aug. 31, 1912. No. 35660.

Power Plant for Upper Michigan Mines. Illustrated description of a high-head hydro-electric development on the Marquette Range, using three types of pipe line. 1800 w. Ir Age—May 2, 1912. No. 32512 C.

A Municipal Hydroelectric Plant. Louis E. Ayres and Gardner S. Williams. Illustrated description of replacing steam by water power in the city of Sturgis, Mich. 2000 w. Eng Rec—March 2, 1912. No. 30981.

Power System Cleveland Cliffs Iron Co. C. A. Tupper. Illustrated description of a hydraulic plant on the Carp River which will furnish power for mines on the Marquette range. 1000 w. Eng & Min Jour—Feb. 3, 1912. No. 30242.

Hydro-Electric Plant on Big Sioux River, Sioux Falls, S. D. H. B. McDermid. Gives an illustrated detailed description of the plant, explaining the engineering difficulties. 2500 w. So Elect'n—Nov., 1911. No. 27978.

The Dakota Power Co.'s Hydro-Electric Plant. Jesse Simmons. Illustrates and describes a development on Rapid Creek, about 9 miles from Rapid City. 1000 w. Min & Engng Wld—July 13, 1912. No. 34446.

The Water Power Development of the Mississippi River Power Company, at Keokuk, Iowa. Hugh L. Cooper. Abstract of an illustrated address describing the largest hydro-electric plant in the world. 4000 w. Jour W Soc of Engrs—March, 1912. No. 32126 D.

The Hydro-Electric Project of the Mississippi River Power Company at Keokuk, Iowa. David Taylor. An illustrated description of a notable development in progress, the construction being done by day labor. 2000 w. Engng & Con—May 29, 1912. Serial. 1st part. No. 33309.

The Hydroelectric Plant at Marseilles. Illustrated description of a development in Illinois, where every inch of head had to be considered. 2200 w. Eng Rec—Feb. 24, 1912. No. 30732.

The Power Plants of the Southern Indiana Power Company. DeWitt S. Moore. Read before the Indiana Engng. Soc. Illustrates and describes a hydroelectric power plant having a steam auxiliary plant as a reserve. 3000 w. Eng Rec—Feb. 10, 1912. No. 30350.

A Hydroelectric Development on the Watauga River. Illustrates and describes the construction of a 4800-h. p. plant in a narrow gorge in Tennessee to utilize a head of 55 feet. 2000 w. Eng Rec—Nov. 11, 1911. No. 27956.

The Ocoee Hydro-Electric Development. Illustrated description of the new plant of the Eastern Tennessee Power Co. supplying current to Chattanooga, Knoxville and Rome. 2500 w. Eng Rec—June 22, 1912. No. 33876.

Hydro Electrical Installation, Chattanooga and Tennessee River Power Company, Hales Bar, Tenn. George A. Orrok. Illustrated detailed description of this development. 6000 w. Pro Brooklyn Engrs' Club—Jan., 1912. No. 35490 N.

Water Power Development in Ohio. E. F. Baker. Information concerning five plants to be erected on the Maumee River and its tributaries. Ills. 1500 w. Power—Feb. 20, 1912. No. 30482.

Pennsylvania Water & Power Company. Illustrated detailed description of a development having the hydroelectric generating stations on the Susquehanna River and the terminal station at Baltimore, Md. 2500 w. Elec Wld—Aug. 24, 1912. No. 35435.

A High-Head Hydroelectric Development in New York. Illustrated description of a 5000-h.p. plant at Ephratah, N. Y., supplied by a two-mile wood-stave pipe line. 2500 w. Eng Rec—Nov. 25, 1911. No. 28291.

A Hydroelectric Plant Equipped with a Novel Surge Tank. Illustrated description of the South Edwards, N. Y., power house and surge tank. 1200 w. Eng Rec—Jan. 6, 1912. No. 29411.

The Snell Hydroelectric Development on Raquette River, New York. Illustrated description of plant and construction where quality was considered before cost. 2000 w. Eng Rec—Feb. 17, 1912. No. 30464.

Hydro-Electric Development at Ingham Mills, N. Y. John Liston. Illustrated detailed description of this example of modern approved practice. 3500 w. Gen Elec Rev—Sept., 1912. No. 35677 C.

Miniature Hydroelectric Plant at Springfield, Vt. M. A. Hicks. Illustrated description of reinforced-concrete dam, power-house with impulse wheel operating under 80-ft. head, and circuit arrangements for a private mountain camp. 2500 w. Elec Wld—Dec. 2, 1911. No. 28594.

The Hydroelectric Development at Bonny Eagle, Maine. Illustrated description of a plant built across the bed of the Saco River and providing a new channel for the unused flowage. 1200 w. Eng Rec—Dec. 23, 1911. No. 29138.

Water-Power for Coal Mines. Illustrates and describes the development of the Appalachian Power Co. in S.W. Virginia. Map. 3000 w. Mfrs' Rec—Feb. 22, 1912. (Special.) No. 30757 D.

The Hydro-Electric Developments of the North Carolina Electrical Company. N. Buckner. Brief description of Ivy and Weaver plants with illustrated details of Marshall station. 1500 w. So Elect'n—April, 1912. No. 31811.

Hydro-Electric Development in Western North Carolina. N. Buckner. Illustrates and describes power plants of the Ashville district. 1500 w. Cassier's Mag —July, 1912. No. 34915 B.

Great Falls Hydro-Electric Development in South Carolina. George Byrne. Illustrated description of this development and the possibilities of the region surrounding it. 3500 w. Mfrs' Rec—June 13, 1912. No. 33689.

Tallulah Falls Hydro-Electric Development of Georgia Railway and Power Company. D. H. Braymer. Illustrated description of a hydro-electric plant of 90,000 h. p. output, in the South. 3500 w. So Elect'n—Sept., 1912. No. 35822.

The Hydroelectric Station at Gatun Spillway. Describes how surplus water at Gatun Lake will be utilized to supply electrical energy for the Panama Canal zone. 2500 w. Eng Rec—July 27, 1912. No. 34808.

New Hydroelectric Development in Canada. Edgar Guy. Illustrated description of the recently completed municipal system of Winnipeg. 4500 w. Elec Rev & W Elect'n—Dec. 2, 1911. No. 28537.

Calgary Hydroelectric Plant. Short illustrated description of the development at the Horseshoe Falls, Bow River, Alberta. 2500 w. Elec Wld—Dec. 23, 1911. No. 28901.

110,000-Volt Transmission System of the Province of Ontario. Illustrated description of the work of the Hydro-Electric Power Commission in distributing electricity. Describes methods and gives costs. 3000 w. Elec Wld—Jan. 6, 1912. No. 29517.

The Hydro-Electric Power Scheme of the City of Winnipeg. Map and illustrated description of the scheme. 2500 w. Elect'n, Lond—March 1, 1912. Serial. 1st part. No. 31135 A.

Water Power from the Beauharnois Canal. Illustrated description of a development to supply light and power to Montreal, Que. 2000 w. Eng Rec—April 6, 1912. No. 31822.

New Hydro-Electric Plant of the Shawinigan Water & Power Co. Julien C. Smith and F. T. Kallin. Illustrates and describes a development at Shawinigan Falls, Quebec, capable of generating electricity up to 100,000 h. p. 3500 w. Elec Wld—May 4, 1912. No. 32612.

Power Development on East Canada Creek. Plan and illustrated description of a new 4000-h.p. unit to supplement an old 1000-kw. plant. 1500 w. Eng Rec—June 8, 1912. No. 33619.

The Hydro-Electric Plant of the Simcoe Railway and Power Company. Illustrated description of the largest hydraulic development in the Georgian Bay district, Canada. 2500 w. Can Engr—June 20, 1912. No. 33908.

Electricity in Canadian Goldfields. Illustrated description of the system of the West Kootenay Power & Light Co., Ltd., in the mining region around Rossland, B. C. 3000 w. Elec Wld—July 27, 1912. No. 34818.

Canadian Hydroelectric Developments. Illustrated description of the low-head generating station of the Canadian Light & Power Co. on the Beauharnois Canal at St. Timothee, Quebec. 3000 w. Elec Wld—Aug. 3, 1912. No. 35061.

The Winnipeg Hydro-Electric Power-Station. Map and illustrated description of this new station. 2200 w. Plate. Engng —July 26, 1912. No. 35162 A.

Western Canada Power Company's System. Illustrated description of the hydroelectric development at Stave Falls, B. C., from which energy is transmitted to Vancouver and into the United States. 2500 w. Elec Wld—Sept. 7, 1912. No. 35848.

The Jordan River Power Development. Illustrated description of hydraulic, generating and transmission features of the Vancouver Island Power Co.'s plant. 4500 w. Elec Wld—Oct. 12, 1912. Serial. 1st part. No. 36791.

Jordan River Development of the Vancouver Island Power Company. Illustrated description of construction work involving the sluicing of material from a three-stage trestle and the laying of 9800 feet of steel pipe. 7000 w. Eng Rec—Oct. 19, 1912. No. 36902.

Proposed Hydro-Electric Development on the River Maipo, near Santiago-de-Chile. Brief account of this new source of electric supply. 1000 w. Elec Rev, Lond—Nov. 10, 1911. No. 28114 A.

A Hydroelectric Power Plant in Chile. E. H. Hatch. Illustrated detailed description of the plant on the Cachapral River. The power house is 2500 ft. above sea level. 2500 w. Eng Rec—Sept. 28, 1912. No. 36403.

A Notable Hydro-Electric Development in South America. Paul Frederick. Illustrated description of the system developed at Santos, Brazil. 1500 w. Gen. Elec Rev—Oct., 1912. No. 36433 C.

Hydroelectric Station of the Cia Docas de Santos, Brazil. Illustrated description of a plant operating under a head of 2100 ft. The cemented flume was a task which covered more than seven years. 2500 w. Elec Wld—March 16, 1912. No. 31239.

The White Coal of Norway (La Houille blanche en Norvège). J. Moltké-Hansen. Hydro-electric plants in a fiord of western Norway. 2000 w. Rev. d'Électrochimie—Oct., 1911. No. 28508 F.

A Mammoth Norwegian Power Plant. Illustrated description of the great plant which furnishes power for the manufacture of saltpeter, and for other applications. 2000 w. Sci Am—July 27, 1912. No. 34778.

The Gullspong Hydro-Electric Power-Station, Sweden. Illustrated description of one of the most important hydroelectric stations in Sweden. 2500 w. Engng—Dec. 22, 1911. No. 29466 A.

Large Swedish Hydro-Electric Plant. J. B. Van Brussel. Brief illustrated description of the 100,000 h.p. plant at Trollhättan. 1000 w. Power—April 23, 1912. No. 32244.

The Swedish State Power Stations. Illustrates and describes the Porjus Falls State hydro-electric power station and matters related. 1600 w. Engng—May 3, 1912. No. 32883 A.

The Rjukanfos Water Power Plant (Wasserkraftanlage am Rjukanfos). F. Marguerre. Details of the construction and machinery in the plant operated at the foot of a 570 meter water-falls. Ills. Serial. 1st part. 6800 w. Elek Kraft u Bahnen—April 24, 1912. No. 32742 D.

The Hydro-Electric Plant at Beaumont (Isère) (L'Usine Hydro-Électrique du Beaumont, Isere). M. Gariel. Description of this Alpine plant. Ills. 3800 w. Génie Civil—Dec. 9, 1911. No. 29790 D.

The Albula Plant (Das Albulawerk). Abstracts from *Elektrizitätswerkes der Stadt Zürich* by H. Peter and H. Wagner. Description of plant on the Albula River which supplies power to Zürich about 85 miles distant. Ills. 3500 w. Elek Kraft u Bahnen—March 14, 1912. No. 32065 D.

The Gail Plant (Die Gailwerke). L. Bernhard. Description of power plant on the Gail River, Villach, Austria; the diversion dam, power house, etc. Ills. Serial. 1st part. 3200 w. Elektrotech u Maschinenbau—March 10, 1912. No. 32068 D.

The Hydro-Electric Plant at Eymoutiers, Haute-Vienne (L'Installation Hydro-électrique d'Eymoutiers, Haute-Vienne). Description of dam, head-works, and plant equipment. Ills. and plate. 2500 w. Tech Mod—April 15, 1912. No. 32767 D.

A Small Rural Hydro-Electric Scheme in France. Describes a rural scheme utilizing the energy of a 15-20 h. p. fall and transmitting current 4.5 miles. 1800 w. Elec Rev, Lond—Aug. 2, 1912. No. 35188 A.

Hydraulic Developments along the French Upper Rhone (L'Aménagement Hydraulique du Haut-Rhone Francais). A. Dumas. Reviews the respective merits and plans of the two power projects, one at Génissiat, and the other having two dams at Malpertius and Bellegarde. Ills., Maps and Plates. 11200 w. Genie Civil—July 13, 1912. No. 35581 D.

"El Molinar" Hydroelectric Plant on the Jucar (Das Wasserkraftwerk "El Molinar" am Jucar). K. Meyer. Describes 70,000 volt plant in Spain, 254 km. from Madrid, furnishing cheap power. Ills. Serial. 1st part. 2400 w. Zeitschr des Ver deutscher Ing—July 27, 1912. No. 35541 D.

Power from Italian Mountain Streams at Heads From 656 to 2,985 Ft.:—The Adamello Development. C. A. Tupper. Illustrates and describes an interesting hydro-electric power development, which includes two generating plants. 6000 w. Eng News—Dec. 28, 1911. No. 29172.

The Hydro-Electric Plant of the Adamello Electric Supply Co. Illustrated description of an important deveopment in Italy. 2500 w. Elect'n, Lond—July 19, 1912. Serial. 1st part. No. 34881 A.

The Adamello Hydro-Electric Plant. First of a series of articles illustrating and describing in detail this interesting Italian development. 2500 w. Engr, Lond—Sept. 20, 1912. No. 36500 A.

The Cannon Falls Hydro-Electric Development. Illustrated description of a plant designed for a capacity of 3000 h.p 1200 w. Sci Am Sup—Dec. 23, 1911. No. 29125.

Further Development at Snoqualinie Falls. Magnus T. Crawford. Illustrates and describes a generating station built to supplement an underground plant. 2200 w. Eng Rec—Jan. 13, 1912. No. 29591.

See also New Zealand, Oil Burning, Power Systems, and Water Power, under *Generating Stations*, and Irrigation, and New York, under CIVIL ENGINEERING, *Water Supply*.

Industrial Plants

The Trend of Industrial Plant Engineering and Part Taken by Underwriters. A. M. Schoen. Outlines the underwriters' work and some of the problems in connection with electric current supply. 1800 w. So Elect'n—Jan., 1912. No. 29637.

Isolated Plants

Some Notes on Isolated Plants. Percival R. Moses. Discusses the present condition of isolated plant design and operation and related topics. 9000 w. Pro Am Inst of Elec Engrs—Jan., 1912. No. 29947 F.

Discussion on "Some Notes on Isolated Plants," New York, Jan. 12, 1912. The paper by Percival R. Moses is discussed. 8800 w. Pro Am Inst of Elec Engrs—Aug., 1912. No. 35377 F.

Cost of Power Generated in Isolated Plants. Gives analysis of the cost of generation by non-condensing engines where the exhaust steam is used for heating during the winter season. 1500 w. Ir Age—Feb. 15, 1912. No. 30416.

Cost of Isolated Plant Power. From a paper prepared by the Am. Engine Co. Outlines a method of arriving at the cost. 1500 w. Power—April 2, 1912. No. 31709.

The Lay-Out and Erection of Power-House Plant. E. Kilburn Scott. Abstract of a paper before the Jun. Inst. of Engrs. Discusses the plant, its arrangement, foundations, erecting, air gap and poles, commutator and brushes, connecting up, cleaning, and drying out. 6500 w. Ir & Coal Trds Rev—July 5, 1912. No. 34480 A.

Notes on the Electrical Work in a Modern School Building. Brief illustrated description of the equipment of the Lane Technical High School of Chicago. 1500 w. Elec Rev & W Elect'n—Oct. 5. 1912. No. 36596.

Electrical Equipment of a Great Group of Office Buildings. Henry C. Meyer, Jr., and Bassett Jones, Jr. Illustrated description of the interesting features in the remodeled plant of the buildings of the Prudential Insurance Co. at Newark, N. J. 2500 w. Elec Wld—Jan. 13, 1912. Serial. 1st part. No. 29640.

The New York Public Library. Eugene E. Smith. Illustrated description of the features of this central generating plant for light, heat, ventilation and power, and the electrical equipment throughout the building. 4000 w. Elec Wld—Dec. 2, 1911. No. 28592.

Isolated Power for Making Shoes. W. B. Wilkinson. Illustrated description of a plant in Brooklyn, N. Y., designed on modern lines. 1200 w. Power—Dec. 19, 1911. No. 29028.

Hebrew Infant Asylum Power Plant. Warren O. Rogers. Illustrated description of a small modern isolated plant. 1800 w. Power—Feb. 27, 1912. No. 30781.

A German Rural Power Plant. Dr. Alfred Gradenwitz. Illustrated description of plant to generate power for agricultural uses. 1200 w. Power—April 16, 1912. No. 31976.

Lighting Plants

The Lister-Bruston Automatic Electric Lighting Plant. Illustrated description of details of a plant suitable for the electric lighting of country houses and other premises. 1000 w. Engng—March 22, 1912. No. 31731 A.

Load Equalization

The Use of Batteries on Alternating Current Systems. Considers the question of load equalization from the alternating current central station engineer's standpoint. Ills. 2800 w. Engr, Lond—Feb. 16, 1912. Serial. 1st part. No. 30801 A.

Load Factors

Central Station Load Factors. E. F. Tweedy. Shows the desirability of railway, ice-making, and other loads to utilize the generating equipment. 2200 w. Elec Wld—Feb. 3, 1912. No. 30266.

A Study of Load-Factors. S. A. Fletcher. Outlines a method of distributing the costs of power generation and distribution. 1500 w. Elec Jour—Sept., 1912. No. 36049.

Natural Influences and Various Charging Loads—Errors from Irregular Running (Influence de la nature et des différents régimes de charge—erreurs irrégularités de marche). A. Durand. Presented at the Turin Congress. Discusses effects of temperature changes, etc. Serial. 1st part. 3000 w. Électricien—Dec. 2, 1911. No. 29782 D.

Some Notes on Loading Large Alternating-Current Generators. F. D. Newbury. Describes various methods of approximating actual load conditions. 2200 w. Elec Jour—Aug., 1912. No. 35358.

A Plan for Increasing the Power Load. H. W. Cope. Read at Seattle convention of the N. E. L. A. Considers some of the problems of the central station and their solutions. 3500 w. Elec Rev & W Elect'n—June 15, 1912. No. 33742.

The Importance of Hiring Powers in Cultivating a Domestic Load. H. H. Holmes. Discusses this means of advancing the use of electricity and some rules that should be observed in dealing with consumers. 2500 w. Elect'n, Lond—June 14, 1912. No. 33920 A.

Hints on Developing a Motor Load. Walter E. Rogers. Suggests motor hiring and explains the scheme. 3000 w. Elec Rev, Lond—July 12, 1912. No. 34659 A.

See also Power Factors, under *Generating Stations.*

Mine Power

Does It Pay the Average Coal Mine to Purchase Central Station Power? Graham Bright. Gives information and reasons for proving the advisability of a mine's purchasing rather than generating its own power. 3000 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33238 F.

Municipal Power

Where Current Is Sold for 2½ Cents. Illustrates and describes the equipment of the plant of the Municipal Light and Power Company, San Francisco. 1500 w. Power—Dec. 5, 1911. No. 28623.

The Municipal Power Plant of Richmond, Va. Illustrated description of a recently completed municipal electrical plant. 2000 w. Munic Engng—Dec., 1911. No. 28772 C.

New Zealand

Large Hydroelectric Developments of the New Zealand Government. Brief account of the Lake Coleridge installation to furnish energy for railway service, towing of canal-boats, street lighting and various industrial purposes. 2000 w. Elec Wld—May 11, 1912. No. 32803.

Oil-Burning Station

The Utilization of Crude Petroleum for Electric Power Production. Illustrates and describes an important equipment installed at El Centro, Cal. 2200 w. Elec Rev, Lond—Dec. 8, 1911. No. 29035 A.

Auxiliary Oil-Burning Station for Southern California District. Illustrated description of the Long Beach plant of the Edison Co. in operation as an auxiliary of the hydroelectric system now in operation. 3000 w. Elec Wld—March 9, 1912. No. 31116.

Operation

Operating Records of a Small Plant. O. Monnett. Actual figures from a plant serving a group of buildings with light, heat, power, hot water, etc. Ills. 1200 w. Power—May 28, 1912. No. 33156.

Rules for Electric Operating Staffs. A discussion of rules for the general system of working and governing of generating plant and mains. 1500 w. Elec Rev, Lond—Aug. 16, 1912. Serial. 1st part. No. 35458 A

Parallel Operation

Operation of Synchronous Machines in Parallel. Lee Hagood. Deals particularly with the economical control of the exciting or wattless current, so as to obtain suitable voltages at the centers of distribution. 4000 w. Gen. Elec Rev—Oct., 1912. No. 36435 C.

Operation of Two Alternating Current Stations Through Parallel Circuits, and the Distribution of Load and Wattless Currents Between Them. J. W. Welsh. An explanation of the operation under various conditions. 3000 w. Pro Am Inst of Elec Engrs—March, 1912. No. 31577 F.

Discussion on "Operation of Two Alternating-Current Stations Through Parallel Circuits and the Distribution of Load and Wattless Currents Between Them." Discussion on the paper by J. W. Welsh, at Portland, Ore., April 18, 1912. 4500 w. Pro Am Inst of Elec Engrs—Oct., 1912. No. 37137 F.

Power Factors

Power Factor, Its Influence and Value. D. H. Ross. Read before the Can. Elec. Assn. Outlines the benefits of a high power factor. 800 w. Can Engr—July 25, 1912. No. 34875.

Improving Power-Factor of an Industrial Load. E. R. Spencer. An account of the power factor correction at the pipe and tube plant of the Spang-Chalfant Co. at Etna, a suburb of Pittsburgh. Ills. 1000 w. Elec Jour—July, 1912. No. 34839.

Evils of Low Power Factors and Means for Their Correction. J. J. McIntosh. 3500 w. So Elect'n—Aug., 1912. No. 34983.

Power-Factor Correction by Rotary Converters Is Hazardous. Nicholas Stahl. Shows the danger involved in attempting over-excitation and indicates the limitations of the method. 1500 w. Elec Jour—Feb., 1912. No. 30845.

The Power-Factor of Low-Speed Polyphase Motors. H. M. Hobart. Gives data useful in determining the suitability of synchronous and induction motors for low-speed drives. 1500 w. Gen Elec Rev—June, 1912. No. 33381 C.

The Determination of the Power-Factor of a Three-Phase Circuit by Means of Two Single-Phase Watthour Meters. Harry N. Lucas. Vector diagrams and explanation. 600 w. Elec Jour—Sept., 1912. No. 36047.

See also Load Factors, under *Generating Stations.*

Power Plants

Economical Effect of Increasing Vacuum on Reciprocating Engine Plant. C. C. Hoke. Presents a "gross economy" formula for making comparative calculations. Also a method of arriving at the net economy. 2200 w. So Elect'n—March, 1912. No. 31097.

Notes on Power Station Working. J. W. Jackson. Abstract of a paper read before the Newcastle Sec. of the Inst. of Elec. Engrs. Reviews recent advances on the mechanical side. 1200 w. Elect'n, Lond—April 19, 1912. No. 32493 A.

Power Installation and Operation for Coast Artillery Posts. Offnere Hope. Discussion of electric power from an artillery standpoint mainly, embracing also lighting. 2500 w. Jour U S Art—Nov.-Dec., 1911. No. 29991 D.

Witherbee-Sherman's New Station. Guy C. Stoltz and Samuel Shapira. Illustrated description of a modern plant supplying electrical energy to operate magnetic mines near Mineville, N. Y. 2500 w. Power—Nov. 21, 1911. No. 28161.

Minneapolis General Electric Company's New Power System. Illustrated description of the general plan and construction details of a new system replacing the station destroyed by fire. 2500 w. Elec Wld —April 27, 1912. Serial. 1st part. No. 32455.

Power Plant of the Ayer Mill. Warren O. Rogers. Illustrated description of a plant of the American Woolen Co. at Lawrence, Mass., equipped with water-tube boilers and turbine-driven generators, and much labor-saving machinery. 2500 w. Power—Dec. 12, 1911. No. 28747.

Winnipeg Municipal Plant in Operation. Detailed description of the generating, transmitting and distributing equipment of one of Canada's finest power plants. Ills. 5000 w. Can Elec News—Dec., 1911. No. 28615 C.

New Generating Station, Portland, Ore. Edward A. West. Illustrated description of a 6000-kw. plant containing two turbo-generators and one engine-driven unit. 2000 w. Power—Dec. 26, 1911. No. 29163.

Delray Station of Detroit Edison Company. Illustrates and describes a plant including largest boilers yet made, capable of supplying turbine loads up to 11,000 kw. 2500 w. Elec Wld—Dec. 16, 1911. Serial. 1st part. No. 29027.

Power System of the Pacific Mills, Methods and Rules for, and Cost of Operation. Fred A. Wallace. Illustrated description of the recently installed system at North Lawrence, Mass., which supplies electric current for power and light to these mills. Discussion. 15500 w. Jour Assn of Engng Socs—Jan., 1912. No. 30818 C.

Plant of Capital Traction Company. J. H. Beattie. Illustrated detailed description of the new plant in Washington, D. C., just completed. 1500 w. Power—Feb. 13, 1912. No. 30384.

Modern Power Plants in Florida Phosphate District. C. A. Tupper. Illustrates and describes gas-engine plants and Diesel oil engines driving Bullock generators. 2000 w. Min & Engng Wld—Feb. 3, 1912. No. 30246.

The Chamber Hall Power Station, Bury. Illustrated detailed description of this new station. 2500 w. Engr, Lond—Feb. 9, 1912. No. 30678 A.

Electric Power Station at Bahia Blanca. Illustrated description of a recently completed plant in Argentine Republic for supplying electrical energy for public and private lighting, tramways, work-shops and wharves. 3500 w. Engr, Lond—Feb. 16, 1912. No. 30800 A.

Buenos Ayres and Pacific Railway Company's Power and Traction Installation at Bahia Blanca. Illustrated detailed description of a recently completed plant in Argentine Republic for the supply of light and power. 2500 w. Tram & Ry Wld—March 7, 1912. No. 31524 B.

Hazard Mfg. Co.'s New Power Plant. Warren O. Rogers. Illustrated description of individual motor drive used on wire-rope making machinery. 1500 w. Power—March 12, 1912. No. 31119.

New Indianapolis Power Station. Illustrated detailed description of a new plant having an ultimate capacity of 48,000 kw. 3500 w. Elec Ry Jour—March 9, 1912. No. 31106.

Small Chinese Power Plant. Walter H. Adams. Illustrated description of a plant supplying light, heat and power to the buildings of the Imperial Pei-Wang University. 2000 w. Power—April 30, 1912. No. 32434.

Stuart Street Power Station, Manchester, Eng. Plan and brief description of this electric station. 1200 w. Engr, Lond —March 8, 1912. No. 31266 A.

New Power Station of Boston Elevated Railway Company. Illustrated description of an important a. c. generating station, with ultimate capacity of 125,000 kw. 2000 w. Elec Wld—March 23, 1912. No. 31506.

South Boston Power Station of Boston Elevated Railway. Illustrates and describes a recently completed station. There are two turbines of 15,000 kw. each and the ultimate capacity is 125,000 kw. 4000

w. Elec Ry Jour—March 2, 1912. No. 31008.

Gas-Operated Power-Station at Kamata, Japan. Plate and brief explanatory note of the station. 180 w. Engng—Sept. 13, 1912. No. 36264 A.

Electricity Supply at Keighley. Harry Webber. Illustrated description of the power plant for electrical driving of textile mills. 2500 w. Elec Rev, Lond—Jan. 5, 1912. No. 29658 A.

New Electrical Generating Station at Britannia Works, Middlesbrough. Illustrated detailed description of the new arrangement of the plant and new power station for these large steel manufacturing works. 4000 w. Engr, Lond—Aug. 30, 1912. No. 35895 A.

Electricity Supply in Sheffield. Illustrated detailed description of the Neepsend works and the high-tension distribution system. 2000 w. Elec Rev, Lond—Aug. 30, 1912. Serial. 1st part. No. 35867 A.

Generating Plants in the Kander Valley (Usine generatrice de Kandergrund). Power to be used for lighting and an electric railway in the Alps. Ills. Serial. 1st Part. 1200 w. Bull. Tech. d. l. Suisse romande.—Oct. 10, 1911. No. 28485 D.

Plants of the Bernese Power Co. (Anlagen der Bernischen Kraftwerke A.-G.). Hydroelectric plants supplying power to the Lötschberg Ry., etc., and situation in the Kander valley. Ills. and Maps. Serial. 1st part. 1500 w. Schweiz Bau—Jan. 6, 1912. No. 30540 D.

See also Central Stations, England, Germany, New Zealand, Saxony, and Scotland, under *Generating Stations.*

Power Selling

Selling Power to Large Manufacturers. A. E. Rickards. Discusses some of the problems involved, the advantages, cost, etc. 2000 w. Elec Jour—June, 1912. No. 34086.

Power Supply

Small Electricity Supply Undertakings. Percy A. Spalding. Abstract of paper read before the Dublin Sec. of Inst. of Elec. Engrs. Reviews changes in conditions under which such supplies may be undertaken. 3800 w. Elec Engr, Lond—Dec. 22, 1911. No. 29448 A.

Power System

Power System Cleveland Cliffs Iron Co. C. A. Tupper. One large hydro-electric plant supplemented by two steam plants, distributing current over 40 square miles to mines. Ills. 1000 w. Power—Jan. 9, 1912. No. 29508.

Rates

Rates for Electricity. R. L. Ellis. Discusses the proper basis for correct service schedules. 4000 w. Engineering Magazine—May, 1912. No. 32346 B.

Electric Rates. Herman H. Spohrer. Gives schedule adopted in St. Louis. 1500 w. Elec Rev & W Elect'n—April 20, 1912. No. 32236.

A Method of Investigating an Existing Rate Schedule for Motor Service. F. B. Fletcher. Discusses methods of collecting and compiling a general review of the motor-service. 1600 w. Elec Wld—March 30, 1912. No. 31707.

Central Station Motor-Service Earnings. Gives unit analysis of sales of electricity for motor applications in six Massachusetts companies. 600 w. Elec Wld—April 13, 1912. No. 31965.

The Effect of Central Station Rates on New Business. H. S. Sines. Discusses the "cost to serve" system of charging and its applications. 2200 w. Elec Rev & W Elect'n—May 4, 1912. No. 32602.

The Sale of Energy for Electric Power. Luther P. Perry. Considers methods of securing a power load. 2500 w. Elec Wld—Jan. 6, 1912. No. 29520.

Diversity-Factor and Fixed Charges. Renzo Norsa. Discusses the problems of diversities. 5000 w. Elec Rev & W Elect'n—Dec. 23, 1911. No. 28905.

Low Rates and the Development of the Central-Station Service. W. E. Burnand. A suggested schedule involving central-station control of customers' meters. 3000 w. Elec Wld—Feb. 3, 1912. No. 30267.

Tariff for Electrical Energy, with Particular Reference to Domestic Tariffs. W. W. Lackie. Explains a system of charging in Great Britain. 4400 w. Inst of Elec Engrs—March 7, 1912. No. 31246 N.

Purchased Power—Its Advantages versus Its Cost. A. E. Rickards. Shows that service based on the advantages to be gained by the use is more satisfactory. 3500 w. Elec Rev & W Elect'n—Sept. 21, 1912. No. 36227.

Graphical Analysis of the St. Louis Residence Rates. Hugo E. Eisenmenger. Gives a graphic representation of three-change rates. 700 w. Elec Wld—March 23, 1912. No. 31509.

The Earning Power of Long Distance Central-Stations (Die Rentabilität von Ueberlandzentralen). Fr. Kesselring. Presenting tables of comparative costs of production and profits of various power companies. 4400 w. Elek u Masch—Jan. 21, 1912. No. 30522 D.

Power Requirements from Central Stations (Betriebsergebnisse elektrischer Zentralen). Adolf Ludin. Illustrating from various load diagrams the irregularity in the demand for electric power on service lines. Serial. 1st part. 1700 w. Elektrotech u Maschinenbau—April 14, 1912. No. 32734 D.

Continental Systems of Charging for Current by Contract. D. Bercovitz. Abstract from *Elektrotech. Zeit.* Gives statistics concerning existing stations on the contract system, discussing the class of consumers to whom it is applicable, and related subjects. 2000 w. Elect'n, Lond —Aug. 9, 1912. No. 35288 A.

Profits and Rate-Making for Electric Plants (Die Rentabilität und Tarifbildung der Elektrizitätswerke). L. Rosenbaum. Theories suggested for practical determinations. Diagrams. 3800 w. Elek u Masch—July 7, 1912. No. 35552 D.

See also same heading, under *Lighting.*

Reconstruction

Enlargement of Texas Central Station. Illustrates and describes details of steam-turbine units employed in the development of the existing plant of the El Paso Electric Railway Co. 3500 w. Elec Wld —Aug. 17, 1912. No. 35269.

Reliability

Means for Securing Reliability and Maintaining Continuity of Supply. Frank Ayton. Abstract of a paper before the Incor. Munic. Elec. Assn. Suggests precautions which would prevent interruptions to supply of both steam and electrical plant. Discussion. 4800 w. Elect'n, Lond—June 21, 1912. No. 34208 A.

Rural Stations

Rural and Domestic Applications of Electricity. Frank Koester. Illustrated account of uses made of electricity on farms in Germany, Italy and other foreign countries. 1500 w. Elec Rev & W Elect'n—Feb. 10, 1912. No. 30379.

Saxony

The First 110,000-Volt Installation in Europe. E. G. Fischinger. Abstract of articles in the *Elektro. Zeit.* Gives an outline of the generating and distributing schemes of this plant in Saxony. Ills. 1500 w. Elect'n, Lond—Dec. 22, 1911. No. 29454 A.

Scotland

Power Generation and Distribution in the Clyde Valley Electrical Power Company's Area. David A. Starr. Abstract of a paper before the Scottish Sec. of the I. E. E. Outlines the early history, the equipment and system of distribution and the recent progress. 4000 w. Elect'n, Lond—June 7, 1912. No. 33770 A.

Statistics

Statistics of Electric Power Plants in Holland for the Year 1910 (Statistiek van Electriciteitsbedrijven in Nederland voor 1910). Giving size, motive power, system, etc., of all plants in Holland. 23 pages. Ingenieur—Jan. 6, 1912. No. 30590 D.

Switchboards

Some Notes on Control Boards for Large Electrical Power Stations. S. W. Mauger. Illustrates and describes designs. 1500 w. Elec Rev & W Elect'n—April 13, 1912. No. 31968.

Removable-Panel Switchboard and Instrument Columns. Warren H. Miller. Illustrated description of switchboards designed for facilitating repair work and of individual generator and motor switch columns. 1700 w. Elec Wld—May 4, 1912. No. 32613.

Switchboard Panels for Three-Wire Generators. A. M. Bennett. Gives various methods of connections, explaining the economic and practical advantages of each. Diagrams. 2000 w. Elec Wld—Feb. 3, 1912. No. 30264.

Switchboards of the Pedestal, Post and Control-Desk Design. Stephen Q. Hayes. Illustrates and describes designs. 3000 w. Elec Rev & W Elect'n—Nov. 18, 1911. Serial. 1st part. No. 28159.

Method of Manufacture of Marble Panels for Switchboards. H. C. Pratt. Describes the important work of electric power in quarrying and in the manufactures. Ills. 1000 w. Elec Jour—March, 1912. No. 31602.

Three Wire

Circuits for Operating Two-Wire Direct-Current Dynamos on Three-Wire System. Description of a large installation. Ills. 2500 w. Elec Rev & W Elect'n —Sept. 7, 1912. No. 35827.

Turbine Drive

Turbine-Driven Station at Atlantic City, N. J. Illustrated description of a new plant for the supply of electricity and hot-water heat. 1800 w. Elec Wld —April 6, 1912. No. 31849.

Valuation

Some Criteria of Value in Public-Service Industries. Clarence P. Fowler. Analytical review of investment data of electric light and power undertakings. 9500 w. Engineering Magazine—March, 1912. No. 30830.

The Real Value of Power Plants and Their Taxation (Sachwerte von Betriebsanlagen und ihre Schätzung). D. Wattmann. Curves showing approximate relative valuation and taxation at periods up to 31 years. 6000 w. Elek Kraft u Bahn—Sept. 4, 1912. No. 36654 D.

Water Power

The Water Power Development of the South, Present and Future. J. E. Sirrine. Favors the governmental control of hydro-electric plants. 2000 w. So Elect'n—Jan., 1912. No. 29636.

Principles of Water-Power Development. W. J. McGee. Discusses the great importance of this issue. 2500 w. Sci Am Sup—Feb. 3, 1912. Serial. 1st part. No. 30204.

Water-Power Projects in New York. An abstract of the report of the N. Y. State Committee. 2500 w. Eng News—Feb. 1, 1912. No. 30237.

Selection of a Water Wheel Unit. O. B. Coldwell. Discusses the features entering into the design which will best meet stated conditions, and the information that should be given the designer. 5500 w. Pro Am Inst of Elec Engrs—April 16, 1912. No. 32424 F.

Wind Power

Electric Power from Wind. H. E. M. Kensit. Information concerning experiments carried out by Prof. La Cour for the Danish government, and of plants in various places. 1000 w. Can Engr—Dec. 14, 1911. No. 29024.

LIGHTING

Arc Lamps

The Long Burning Flame Carbon Arc Lamp. C. E. Stephens. Illustrated detailed description. 1800 w. Elec Jour—June, 1912. No. 34044.

The Characteristics of Flaming Arc Lamps. A. G. Rakestraw. A discussion of operation illumination, and application features. Ills. 2000 w. So Elect'n—Aug., 1912. No. 34981.

A Consideration of Modern Flame Arc Lamps and of Their Future Possibilities. Dr. W. Hechler. Abstract of an article in the *Elektrotechnische Zeit.* Discusses improvements needed. 2000 w. Elect'n, Lond—July 26, 1912. No. 35148 A.

Yellow Flame Arcs. M. Solomon. Abstract of a paper before the Birmingham Sec. of the I. E. E. Deals with the characteristics of the arcs in typical types and the effect of changes of current and voltage and of different carbons on the light distribution curves. 4000 w. Elect'n, Lond—May 3, 1912. No. 32873 A.

Some Observations on the Metallic Arc. G. M. Little. A report of investigations and results. Ills. 3000 w. Elec Jour—Feb., 1912. No. 30846.

A New Arc Lamp for Polyphase Current. W. Wedding. Abstract of an article in *Elektrotechnische Zeit.* Describes a new lamp due to Schäffer, who gives to each of three carbons a movement in two different directions. 1500 w. Elect'n, Lond—Aug. 2, 1912. No. 35190 A.

Radiant Efficiency of the Carbon Arc Lamp. William H. Damon and William J. Enders. Discusses the radiant efficiency of the crater of the direct-current carbon arc. Ills. 1500 w. Elec Wld—Sept. 7, 1912. No. 35851.

The Function of Series Resistance in Multiple Arc Lamps. Harold Craig. Discusses the multiple arc lamp and the principles of its succesful operation. 1000 w. Sc Elect'n—Sept., 1912. No. 35825.

See also Mercury Vapor, and Street, under *Lighting.*

Bulbs

Vacuum Testing of Glass Bulbs (Vacuumprüfung von Glühbirnen). Bruno Thieme. Describes method of testing by use of the Tesla apparatus. Ills. 1000 w. Elektrotech Rundschau—March 27, 1912. No. 32063 D.

Car Lighting

See Lighting, under MECHANICAL ENGINEERING, *Automobiles.*

Condensers

The Use of Condensers on Alternating-Current Lighting Circuits. A. W. Ashton. Explains the application of condensers to lighting circuits. 1800 w. Elec Rev, Lond—March 1, 1912. No. 31132 A.

Cost

The Cost of Arc Lighting and General Service from Medium and Small Size Municipal or Private Plants. W. Edgar Reed. Considers the costs of lighting and general service, discussing the principal factors affecting costs. 4000 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28211 F.

The Cost of Light and a Comparison of Lighting Units. A. G. Rakestraw. Gives curves showing cost in cents per 1000 spherical candle-power hours, with explanations. 1000 w. So Elect'n—Oct., 1912. No. 36799.

Comparative Costs and Efficiency of Gas, Electric, and Gasoline Lighting. W. M. Blinks. Read before the Nat. Com. Gas Assn. With short discussion. 7500 w. Pro Age—Dec. 15, 1911. No. 28967.

Methods of Obtaining Cost of Electric Lighting Service to Consumers Based on

Decisions of the Wisconsin Railroad Commission. C. L. Cory. Read before the League of Cal. Municipalities. 4500 w. Engng & Con—Jan. 10, 1912. No. 29526.

Electrical Equipments

Electrical Features of Some Chicago Office Buildings. Illustrates and describes equipments for lighting and motor service. 3000 w. Elec Wld—Sept. 14, 1912. No. 35973.

Emergency Lighting

Emergency Lighting in Theatres and Other Buildings. John D. Mackenzie. Gives extracts from rules issued by the London County Council, and describes a method already installed in two theatres, and found satisfactory. 2500 w. Elect'n Lond—Aug. 16, 1912. No. 35463 A.

Illumination

An Analysis of Glare from Paper. M. Luckiesh. A study of the reflection from papers, stating conclusions. 1500 w. Elec Rev & W Elect'n—June 1, 1912. No. 33387.

Notes on Diffusion of Light. J. R. Cravath. An account of tests and conclusions on all kinds of lighting installations as regards glare from paper. 2500 w. Elec Wld—Jan. 13, 1912. No. 29644.

The Influence of Spectral Character of Light on the Effectiveness of Illumination. M. Luckiesh. Deals with the influence of the achromatism of the eye on the effectiveness of illumination. 3000 w. Elect'n, Lond—Aug. 9, 1912. No. 35290 A.

Principles of Illuminating Engineering. A. G. Rakestraw. Illustrated discussion of lamps employing a filament in air, including the Nernst. 1600 w. So Elect'n —Nov., 1911. No. 27980.

Important Influences in the Making of Illuminating Engineering. R. W. Shenton. Reviews the progress in illumination and the improvements in lighting apparatus. 2000 w. So Elect'n—Oct., 1912. No. 36798.

The Value of Photography in Illuminating Engineering. Illustrated article on the taking of good photographs of artificially lighted interiors. 2000 w. Elec Rev & W Elect'n—Dec. 23, 1911. No. 28907.

Graphical Calculation for the Design of Lighting Systems. R. F. Pierce. Gives charts and tables with explanation of their use. 3000 w. Pro Age—Aug. 15, 1912. No. 35178.

Graphs of Certain Relations in Industrial Lighting Economics. Roscoe Scott. Gives charts, with explanation of their construction and use. 2200 w. Elec Wld —Feb 10, 1912. No. 30383.

What an Automatic Dynamo Lighting System Should Do. Leonard Kebler. Read before the Soc. of Auto. Engrs. Considers the points of importance in determining the necessary qualifications for such a system. 3500 w. Horseless Age—June 5, 1912. No. 33483.

Some Modern Problems of Illumination. T. Thorne Baker. Discusses ways and means of producing an illumination as nearly resembling daylight as possible. Ills. General discussion. 8500 w. Jour Soc of Arts—March 8, 1912. No. 31279 A.

The Influence of Illumination Conditions Upon Eye-Strain. Arthur J. Sweet. A study of the influence of illumination and the conditions producing eye-strain. Ills. 6500 w. Elec Rev & W Elect'n—March 16, 1912. No. 31227.

The Effect of Height of Suspension of Lamps Upon the Intensity of Illumination. W. E. Barrows, Jr. Shows that the "inverse-square law" must be used with caution under certain conditions. 800 w. Elec Wld—March 23, 1912. No. 31510.

Daylight. Edward L. Nichols. A study. 4000 w. Jour Fr Inst—April, 1912. No. 32161 D.

Illumination: Production, Calculation, Measurement. J. D. Mackenzie Read before the Scottish Sec. of the Inst. of Elec. Engrs. (Abstract.) Discusses the calculation of illumination in given cases, and the measurement. 3500 w. Elect'n, Lond—April 12, 1912. No. 32255 A.

Calculations for Horizontal Lighting (Berechnung der Horizontalbeleuchtung). Fr. Blacizek. Presents mathematical formulae. 1600 w. Elektrotech u Maschinenbau—Dec. 10, 1911. No. 29742 D.

On the Ultra-Violet Energy in Artificial Light Sources. Louis Bell. Describes a study of the effect on human eyesight. Ills. 4000 w. Elec Wld—April 13, 1912. No. 31966.

Methods of Calculating Illumination. E. B. Rowe. Discusses methods based on light flux. 2500 w. Elec Jour—June, 1912. No. 34034.

The Rôle of Chemistry in Lighting Technique (Die Rolle der Chemie in der Beleuchtungstechnik). O. Kruh. Review of the chemical technology as applied to the study of illumination. Serial. 1st part. 3000 w. Elek u Masch—July 28, 1912. No. 35556 D.

The Value of Good Illumination as Regards Health and as a Means of Preventing Accidents. Leon Gaster. Abstract of a paper read at the Milan Cong. Reviews progress made and benefits from proper lighting of shops and factories. 1800 w. Elect'n, Lond—Aug. 23, 1912. No. 35745 A.

Some Inconsistencies in American Lighting Practice. Criticism of street-lighting and electric advertising signs. 2000 w. Elec Rev, Lond—Aug. 23, 1912. No. 35739 A.

Efficacy in Illumination. Preston S. Millar. Reviews the development of illum'nating practice. 2500 w. Elec Wld—Oct. 12, 1912. No. 36793.

The Principles of Industrial Lighting. Frank B. Rae, Jr. The present article discusses the general principles and benefits of good lighting. 3000 w. Ind Engng—March, 1912. Serial. 1st part. No. 31564 C.

General Aspects of Industrial Lighting. L. B. Marks. Treats of the problem of artificial illumination in industrial plants. Ills. 2500 w. Elec Rev & W Elect'n—June 1, 1912. No. 33385.

The Installation of Industrial Lighting Systems. C. E. Clewell. Considers details of lamp installations. 4000 w. Elec Jour—June, 1912. No. 34033.

Industrial Illumination and the Average Performance of Lighting Systems. C. E. Clewell. A discussion of industrial conditions, illumination factors, efficiency, and related matters. Ills. 3000 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34856 F.

Practical Industrial Illumination Problems. C. E. Clewell. Discusses the location and spacing of lamps, the selection of type and size, etc., 4000 w. Elec Jour—July, 1912. No. 34837.

Power House Lighting. C. E. Clewell. Illustrated discussion of principles and requirements. 2500 w. Power — Nov. 28, 1911. No. 28, 1911. No. 28369.

Private House Lighting by Electricity. W. R. Rawlins. Abstract of paper read before the Ill. Engng. Soc. Suggestions for various classes of houses, explaining principles and difficulties. 1500 w. Elect'n Lond—April 26, 1912. No. 32831 A.

The Illumination of the Home. F. A. Vaughn. Discusses requirements of different parts of the house. Ills. 2500 w. Elec Rev & W Elect'n—June 1, 1912. No. 33386.

The Problems of Interior Illumination. Bassett Jones, Jr. Considers certain phases of the problem of artificial illumination, due to the architectural character. Ills. 6000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34077 F.

Lighting Large Assembly Rooms. Albert Scheible. Considers the requirements and comments on the seven rules presented at the Int. Cong. at Dresden. Also editorial. 2000 w. Elec Wld—June 29, 1912. No. 34145.

The Illumination of Small Stores. Clarence L. Law and A. L. Powell. Discusses present practice in small store lighting with tungsten lamps. 3000 w. Can Elec News—Oct., 1912. No. 36431 C.

Present Practice in Small-Store Lighting with Tungsten-Filament Lamps. Clarence L. Law and A. L. Powell. Read before the Ill. Engng. Soc. Gives results of an investigation of lighting conditions in our 800 small stores located in and near New York City. Ills. 3000 w. Elec Rev & W Elect'n—Oct. 26, 1912. No. 37041.

The Exterior Lighting of the Boston Electric Show. Dr. Louis Bell. Explains the difficulties and illustrates and describes the scheme as carried out. 1500 w. Elec Wld—Oct. 5, 1912. No. 36586.

The Pabst Theatre, Milwaukee. Illustrated description of the application of indirect illumination to an old theatre auditorium. 1000 w. Elec Wld—Dec. 23, 1911. No. 28902.

Recent Tendencies in Foreign Lighting Practice. Dr. Louis Bell. Brief review of recent developments. 1500 w. Elec Wld—Oct. 26, 1912. No. 37044.

Ornamental Luminous Arc Lighting at New Haven. C. A. B. Halvorson. Explains reasons for selecting the system, and describes method of installation and the results. Ills. 1500 w. Gen Elec Rev—April, 1912. No. 31864 C.

Lighting of the Underground Railways of London. From a paper by Haydn T. Harrison, read before the Ill. Engng. Soc. Illustrates and describes methods employed. 1200 w. Elec Wld—May 11, 1912. No. 32805.

Underground Lighting with Low Voltage Metallic-Filament Lamps. F. Milburn. Read before the N. of Eng. Branch of the Assn. of Min. Elec. Engrs. Discusses mine lighting, its safety, cost, and efficiency. 1400 w. Ir & Coal Trds Rev—April 5, 1912. No. 32109 A.

See also Illuminometry, under *Measurement*, and Shop Lighting, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Incandescent Lamps

Luminous Intensity and Energy Relations in Incandescent Lamps. F. E. Cody. Mathematical investigations. 4000 w. Elec Rev & W Elect'n—Nov. 25, 1911. No. 28299.

Vacua. W. R. Whitney. Report of observations made in the research laboratory on some phenomena in vacua. 4000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34066 F.

The Recent Remarkable Development of the Incandescent Lamp. A. B. Reeve. Considers the rapid development of metal filament lamps. Ills. 1500 w. Yale Sci M—Jan., 1912. No. 30035 C.

Modern Incandescent Electric Lamps. Leonard J. Lewinson. Discusses lamps employing filaments operating in high vacuum, comparing lamps in present commercial use. Ills. 6500 w. Sch of Mines Qr—April, 1912. No. 32159 D.

The Latest Incandescent Lamp. Evan J. Edwards. Detailed discussion of factors concerned in the making of incandescent lamps, the processes involved in the manufacture and testing and the general properties of the finished product. Ills. 5500 w. Jour Assn of Engng Socs —April, 1912. No. 33113 C.

Incandescent Electric Lamps. Glen P. Cowan. Explains methods of manufacture and operating characteristics. 5000 w. Wis Engr—May, 1912. No. 33648 C.

Development in the Tungsten Lamp. Dr. G. P. Scholl. Reviews recent improvements made in these lamps. 1500 w. Elec Jour—June, 1912. No. 34046.

Metallic Filament Lamp Economies. Discusses the economies possible by use of the latest types of lamps. 1200 w. Prac Engr—June 7, 1912. No. 33777 A.

Characteristics of Metal Filaments. Daniel H. Ogley. Reports results of tests of the relation between power consumption and impressed voltage, and comparative tests of carbon and metal-filament lamps. 1500 w. Elec Rev, Lond— Sept. 20, 1912. No. 36482 A.

Some Operating Characteristics of Metal-Filament Lamps. J. Frank Martin. Remarks on load variation, overshooting, etc. 1,000 w. Elec Rev & W Elect'n— Nov. 11, 1911. No. 27965.

The Preparation of Metallic Filaments for Incandescent Lamps (Procédés Actuels de Préparation des Filaments Métalliques pour Lampes à Incandescence). Jean Escard. The several metals used for filaments and the modes of preparation. 6800 w. Tech. Mod.—Oct., 1911. No. 28421 E.

Advantages of Metallic Filaments (Avantages que présente l'emploi des lampes à filaments métalliques). Ch. Vallet. Comparisons in efficiency between the later metallic and the former carbon filaments. Serial. 1st part. 3000 w. L'electricien—Nov. 11, 1911. No. 28849 D.

Special Phenomena Accompanying the Rupture of Incandescent Filament in Mixtures of Air and Combustible Gases (Phénomènes spéciaux accompagnant la rupture des filaments incandescents dans les mélanges d'air et de gaz combustibles). H. Couriot and J. Meunier. Interesting experiments for the laboratory. Ills. 4000 w. Génie Civil—Jan. 20, 1912. No. 30618 D.

Incandescent Lamps with Luminous Points (Lampes a incandescence a source ponctuelle). A. Bidault des Chaumes. Reviews the operation of luminous pointed lamps for use in stereopticons, etc. Ills. 3700 w. Génie Civil—May 18, 1912. No. 32786 D.

Condensers in Series with Metal Filament Lamps. A. W. Ashton. Describes recent developments in the use of low-voltage metal filament lamps in series with condensers on alternate-current circuits. 5000 w. Inst of Elec Engrs— May, 1912. No. 33447 N.

Are Incandescent Lamps Free from Self-Induction? M. Höchstadter. Abstract from *Elektrotech. und Maschinenbau.* Report of experimental investigations. 1000 w. Elect'n, Lond—Dec. 15, 1911. No. 29218 A.

Incandescent Mantles

Incandescent Mantles of Silk (Einiges über Kunstseide-Glühkorper). G. Nap. Describes the utility and durability of silk mantles. Ills. 2500 w. Glaser's Ann— Nov. 1, 1911. No. 28837 D.

Indirect Lighting

Indirect Illumination. J. A. Hoeveler. Considers its desirability for many interiors, its efficiency, requirements, etc. Ills. 2500 w. Wis Engr—Nov., 1911. No. 28280 C.

Lamp Standards

Artistic Street Lamp Standards. Illustrates novel designs, considering their merits. 2000 w. Elec Rev, Lond—March 22, 1912. No. 31719 A.

Further Notes on the Design and Efficiency of American Street Lighting Standards. L. Crouch. Illustrates standards and discusses the questions of efficiency, capital and operating costs of new equipments. 2200 w. Elec Rev, Lond—July 19, 1912. No. 34596 A.

Mercury-Vapor

Study of the Light from the Mercury Arc. Herbert E. Ives. Considers the color of light from the mercury arc with the Cooper Hewitt fluorescent reflector. 1200 w. Elec Wld—Aug. 10, 1912. No. 35112.

The Operation of Mercury Arc Rectifiers. Q. A. Brackett. Describes briefly the manner in which a rectifier bulb operates, and its use for battery charging. Ills. 4000 w. Elec Jour—Feb., 1912. No. 30844.

Special Energy Distribution of Neon and Helium. W. W. Coblentz. On progress in vacuum tube illuminants. 1200 w. Elec Wld—Feb. 17, 1912. No. 30488.

French and German Quartz Tube Mercury-Vapor Lamps. Warren H. Miller. Describes the design and operation and gives data as to cost and service. Ills. 900 w. Elec Wld—July 27, 1912. No. 34819.

The Quartz Mercury Vapor Lamp. Gives particulars of the underlying principles of these lamps. Ills. 2200 w. Elect'n, Lond—Sept. 20, 1912. No. 36484 A.

A New Metal-Vapor Lamp with a White Light. Describes the work of Dr. M. Wolfke, who uses an alloy of cadmium with a small percentage of mercury, producing a white light. 1000 w. Elec Rev, Lond—Oct. 4, 1912. No. 36830 A.

The Moore Lighting System (Ueber Moore-Lichtanlagen). W. Grix. Description of the operation and results from the Moore mercury-vapor tube system of lighting. Ills. 4400 w. Zeitschr des Ver deutscher Ing—April 13, 1912. No. 32719 D.

The Quartz Mercury Vapor Lamp for Alternating Currents. F. Girard, in *E. T. Z.* Illustrated description of an alternate current quartz lamp developed at the laboratory of Messrs. Heraeus, of Henau. 800 w. Elec Rev, Lond—Sept. 20, 1912. No. 36480 A.

Quartz Lamps with Mercury Vapor in Vacuo; Their Use for Lighting and Producing Ultra-Violet Radiations; Their Slow or Sudden Alteration (Les Lampes en Quartz a Vapeur de Mercure dans le Vide; leur Emploi a l'Éclairage et a la Production de Radiations Ultraviolettes; leurs Altérations Lentes ou Brusques). D. Berthelot. Describes lamps, their use in lighting and water sterilization, etc. 12600 w. Bull Soc Int Electriciens—June, 1912. No. 36185 F.

Metallic Filaments

Changes in Metallic Filaments During Use. F. J. Brislee. Shows that the high temperatures causes the filaments to become crystalline. 1200 w. Elect'n, Lond—May 31, 1912. No. 33663 A.

Condensers for Metallic Filament Lamps. Explains the theory of employing condensers for reducing the voltage at the terminals of electric lamps. 2000 w. Engr, Lond—March 22, 1912. No. 31732 A.

Metal Filament Lamps of High Power in Use on Railways. H. Marchand. An explanation of what has been accomplished with these lamps. 3200 w. Bul Int Ry Cong—July, 1912. No. 34735 G.

Note on the Use of High Power Metal Filament Lamps by the Administration of the Belgian State Railway. J. B. Thonet. A report of the installations and the results. 1900 w. Bul Int Ry Cong—July, 1912. No. 34736 G.

See also Incandescent Lamps, under *Lighting.*

Photometry

Some Factors in Heterochromatic Photometry. Louis Bell. Calls attention to a frequent source of error in comparing lights differing in color, reporting experiments. Ills. 3000 w. Elec Wld—Jan. 27, 1912. No. 30105.

Ultra-Violet Radiation from Ordinary Illuminants. M. Luckiesh. Gives interesting details of a photographic study made of the ultra-violet light given by various illuminants. Ills. 1200 w. Elec Wld—June 15, 1912. No. 33740.

Physical Photometers. J. S. Dow. Also editorial. Considers forms of physical photometers and methods utilized. 3500 w. Elec Wld—Oct. 26, 1912. No. 37043.

A Photometric Investigation of Mercury-Vapor Lamps. Dr. J. Pole. Abstract of an article in *E. T. Z.* A report of photometric measurements. 1000 w. Elec Rev, Lond—March 15, 1912. No. 31519 A.

See also Illuminometry, under *Measurement.*

Progress

Electric Lighting and Power Development. George Wilkinson. Abstract of a presidential address before the Incor. Munic. Elec. Assn. Reviews the development in England. 2500 w. Mech Engr—June 28, 1912. No. 34323 A.

Radiography

Symphony in Stereoscopic Radiography. P. H. Eijkman. An account of work in Roentgen stereoscopy. Ills. 1500 w. Jour Fr Inst—July, 1912. No. 34629 D.

Railway Stations

See Stations, under RAILWAY ENGINEERING, *Permanent Way and Buildings.*

Rates

Adjustment of Electric Lighting Rate. Extracts from the reports of the Wisconsin Ry Commission, and a paper by Prof. Cory, showing the influence of the load factor upon the total cost. 2500 w. Power—April 7, 1912. No. 31852.

Reflectors

The Choice of Reflectors for Street Lighting. Dr. L. Bloch. Considers the most suitable shape for the reflector to be used with metal filaments for street lighting, showing that the parabolic gives the best results. 1500 w. Elect'n, Lond—May 31, 1912. No. 33661 A.

The Choice of Reflectors and Proper Heights for Metal Filament Street Lamps (Die Wahl des Reflextors und die Aufhängehöhe für die Strassenbeleuchtung mit Metallfadenlampen). L. Bloch. A study in street lighting. Diagrams. 3600 w. Elek u Masch—Dec. 3, 1911. No. 29739 D.

See also same heading, under *Generating Stations.*

Shop Lighting

Upkeep of Shop Lighting Systems. C. E. Clewell. The seventh of a series of articles on shop lighting. The present article deals with electrical circuits, use of carbons for arc lamps, inspection, etc. 2000 w. Am Mach—March 28, 1912. No. 31541.

Selecting the Light for the Foundry. B. G. Worth. From an address before the Newark (N. J.) Found. Assn. Considers the problem of lighting for molding, the choice of type of lamp and amount and distribution of illumination. 3000 w. Ir Age—March 14, 1912. No. 31162 C.

See also Illumination, under *Lighting.*

Storage Batteries

House Lighting by Storage Batteries. H. R. Taunton. Outlines a scheme for such lighting. 1500 w. Elec Rev, Lond—Aug. 23, 1912. No. 35741 A.

Streets

Arc vs. Tungsten Street-Lighting in Small Towns. C. E. Stephens. Discusses the requirements of street illumination and the conditions, quality and quantity of light and its relation to intensity, showing that local conditions determine the unit to be used. 4500 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33237 F.

Discussion on "Arc vs. Tungsten Street Lighting in Small Towns." Discusses the paper of C. E. Stephens, at Portland, Ore., April 16, 1912. 5000 w. Pro Am Inst of Elec Engrs—Sept., 1912. No. 36314 F.

Street Lighting. J. M. Bryant and H. G. Hake. Information designed to be of service in selecting the proper lamp and fixing the charge. Tables and diagrams. 61 pages. Univ of Ill Bul, No. 51—Dec. 11, 1911. No. 29818 N.

Series Tungsten Lamps for Street Lighting. H. A. Hussey. Discusses the requirements of street lighting and the adaptation of series tungsten lamps. 2500 w. Elec Jour—June, 1912. No. 34035.

Boulevard Lighting in Binghamton. John A. Giles. Illustrated description of a system using tungsten lamps on combined lighting and trolley poles, and many interesting details. 1600 w. Munic. Jour—Aug. 29, 1912. No. 35637.

Street Lighting in Toronto, Ontario. K. L. Aitken. Illustrates and describes interesting features of an installation using tungsten multiple lamps exclusively for all public lighting. 2500 w. Elec Wld—Sept. 7, 1912. No. 35849.

Street Lighting by Metallic Flame Arc Lamps. W. P. Hurley and C. B. Padon. A typical installation is illustrated and described. 1500 w. Elec Jour—June, 1912. No. 34041.

Street Lighting. H. F. J. Thompson. Discusses the use of metallic-filament lamps. 1500 w. Elec Rev, Lond—Jan. 5, 1912. No. 29659 A.

New Street Lighting in Chicago. Illustrated description of the work performed under a contract between the Sanitary District and the city. 3000 w. Elec Wld—Oct. 12, 1912. Serial. 1st part. No. 36792.

Street Lighting in Series by Metallic Arcs and Mercury Rectifiers (La illuminazione stradale con serie di archi metallici e apparecchi rettificatori a mercurio). Guido Peri. Details of such systems. Ills. Serial. 1st part. 3300 w. Industria—April 7, 1912. No. 32312 D.

Train Lighting

See Self-Regulating, under *Dynamos and Motors*, and Train Lighting, under RAILWAY ENGINEERING, *Motive Power and Equipment.*

Visual Acuity

The Dependence of Visual Acuity on the Wave-Length of Light. M. Luckiesch. Presents results of investigations, with editorial note. 3000 w. Elec Wld—Nov. 18, 1911. No. 28152.

Acuity Tests in a Particular Room Illuminated in Turn with Direct and Indirect Lighting. Sydney W. Ashe. Gives result of tests made to determine illuminating efficiencies. 2000 w. Gen Elec Rev—Aug., 1912. No. 34954 C.

Some Physiological Considerations in Lighting Problems. W. F. Schaller. Considers points which tend to relieve the strain on the eye when working with artificial light. 2500 w. Gen Elec Rev—Aug., 1912. No. 34955 C.

See also Illumination, under *Lighting.*

MEASUREMENT

Cable Testing

The Matthews Improved Telafault. Explains its operation in the testing of power and telephone cables. 1800 w. Elec Rev & W Elect'n—Jan. 13, 1912. No. 29550.

Calibration

Instrument Calibration by Means of the Spark-Gap. Ralph P. Clarkson. Illustrates and describes apparatus devised by the author for calibrating voltmeters and other instruments for use in very high potential work by comparing them with the spark-gap as a standard. 2000 w. Elec Wld—June 15, 1912. No. 33737.

Capacity

Relation of Flywheel and Motor Capacity for Industrial Loads. S. A. Fletcher and Charles R. Riker. Considers the interaction between flywheel and motor and a graphical method of determining the relation. 2500 w. Elec Jour—March, 1912. No. 31605.

Circle Diagram

The Development of the Circle Diagram for the Three-Phase Induction Machine. T. F. Wall. Read before the Birmingham Loc. Sec. of the Inst. of Elec. Engrs. The circle diagram is developed by considering the action of the rotating field in one phase. The accuracy is discussed and results of tests given. 1500 w. Elect'n, Lond —Jan. 5, 1912. No. 29661 A.

Dynamometers

Electric Torsion Dynamometer. Fritz Lux. Abstract translation of a paper read before the Shiffbau technische Gasellschaft. Describes an instrument aiming to record horse-power hours. 1000 w. Engng—Nov. 24, 1911. No. 28668 A.

Electrical Apparatus for Measuring Power. Charles R. Moore. Illustrated description of direct-reading dynamometer indicating torque, speed and horse power of revolving mechanisms without calculations. 2500 w. Elec Wld—Aug. 31, 1912. No. 35691.

A Tubular Electrodynamometer for Heavy Currents. P. G. Agnew. Gives the theory, construction, and performance of the instrument. Ills. 1500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34081 F.

Fluxmeter

A New Type of Fluxmeter. B. H. Morphy and U. A. Oschwald. Illustrated description of the apparatus and its operation. 1200 w. Elect'n, Lond—Jan. 19, 1912. No. 30156 A.

Galvanometers

Characteristics and Applications of Vibration Galvanometers. Frank Wenner. Explains their construction and gives information relating to their use. 2500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34075 F.

The Maximum Sensibility of a Duddell Vibration Galvanometer. H. F. Haworth. Abstract of a paper before the Phys. Soc. Shows that the maximum sensibility is obtained when the flux through it is so adjusted that the back E. M. F. of the coil is equal to and in phase with, its ohmic resistance drop. 1200 w. Elect'n Lond—Aug. 9, 1912. No. 35289 A.

A Magnetic Shunt Vibration Galvanometer. Henry Tinsley. Describes a Kelvin type of vibration galvanometer with magnetic shunt, giving some details of results obtained. Ills. 1800 w. Elect'n, Lond—Sept. 13, 1912. No. 36915 A.

Generator Tests

Short Circuit Tests of a 12,000 KW. 9,000 Volt 25 Cycle Turbo-Generator with External Reactance Coils. Rudolf Frederick Schuchardt. States the points to be determined and describes tests. Ills. 2500 w. Wis Engr—Feb., 1912. No. 30879 C.

Illuminometry

Some Recent Advances in the Measurement of Light and Illumination. J. S. Dow and V. H. MacKinney. Abstract of a paper read before the Optical Convention. Reviews the progress made in the design of apparatus for measuring illuminations, considers some applications, and describes a new apparatus. 4000 w. Elect'n, Lond—Aug. 2, 1912. No. 35191 A.

Apparatus for Measuring Light and Illumination. J. S. Dow and V. H. Mackinney. Illustrates and describes new apparatus, explaining the use and advantages. 3000 w. Elec Wld—Aug. 17, 1912. No. 35273.

A Simplified Illuminometer. Clayton. H. Sharp and Preston S. Millar. Illustrated description of the instrument and of the method of assuring constancy of the comparison lamp. 2000 w. Elec Wld —Aug. 3, 1912. No. 35066.

A Photographic Method for Recording Candle-Power Distribution Curves. Herbert E. Ives and M. Luckiesh. Describes a photographic method peculiarly applicable to arc lamps and other fluctuating sources. Ills. 3000 w. Elec Wld—July 20, 1912. No. 34696.

The New Laboratory for Illumination Testing at the Zürich Gas Plant (Das neue Lichtmess-Laboratorium des Gaswerks Zürich). A. Weiss and E. Ott. Describes laboratory, its duties and equipment. Ills. 2300 w. Schweiz Bau—June 15, 1912. No. 34529 D.

See also Photometry, under *Lighting*.

Instruments

The Selection of Electrical Apparatus. H. M. Phillips. An investigation of conditions governing capacity. 3500 w. Cassier's Mag—Feb., 1912. No. 30282 B.

Hot Wire Instruments. A. W. Pierce and M. E. Tressler. Explains the special field for use of these instruments. 600 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34089 F.

Induction Type Indicating Instruments. Paul MacGahan. Discusses the principles of operation, accuracy, theory and performance. Ills. 3000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34085 F.

Electrical Transmission of Electrical Measurements. O. J. Bliss. Describes an arrangement of instruments for transmitting and reproducing at a distance a direct electrical measurement, the medium of transmission being a telephone line. 1000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34079 F.

Inspecting and Testing Electrical Apparatus. A. L. Cook. Considers methods of inspecting and testing ordinary alternating- and direct-current generating and transforming apparatus. 4000 w. Power—Aug. 6, 1912. Serial. 1st part. No. 35070.

Insulation

High-Voltage Tests and Energy Losses in Insulating Materials. E. H. Rayner. Abstract of paper before the Inst. of Elec. Engrs. Describes experiments made to discover the effect on the electric strength of materials of applying for some time a voltage that is 30 to 90 per cent of that which will produce a breakdown in a few seconds. 4000 w. Elect'n, Lond—Feb. 9, 1912. Serial. 1st part. No. 30680 A.

Materials for Electrical Insulation. N. D. Seaton. Considers methods of determining the fitness of insulation to withstand the conditions under which it must operate. 7500 w. Ap Sci—Sept., 1912. No. 37020 C.

Interferometry

The Interferometry of Air Carrying Electrical Current. Carl Barus. Reports a test made to determine whether a rarefied column of air, through which a current of electricity is flowing, shows any perceptible change of its index of refraction. 1800 w. Am Jour of Sci—Aug. 1912. No. 35314 D.

Laboratories

The Electrical Engineering Laboratory at the Heriot-Watt College, Edinburgh. Prof. F. G. Baily. Abstract of paper read before the Scottish Sec. of the Inst. of Elec. Engrs. Describes the laboratory as reconstructed, rearranged and newly equipped. 3500 w. Elect'n, Lond—Jan. 5, 1912. Serial. 1st part. No. 29662 A.

The Gif Laboratory for Experimentation in Radioactive Substances (Le Laboratoire d'Essais des Substances Radioactives, à Gif). Jacques Danne. Description of laboratory, its location and equipment, and some determinations made there. Ills. 7500 w. Genie Civil—Feb. 24, 1912. No. 31408 D.

Belgian High-Tension Testing Laboratories. Alfred Gradenwitz. Illustrated detailed description of the laboratory and equipment. 2000 w. Elec Rev, Lond—Aug. 16, 1912. No. 35457 A.

The Fitz Gerald and Bennie Laboratories in Niagara Falls. Brief account of the work at these laboratories. Ills. 2000 w. Met & Chem Engng—Sept., 1912. No. 35727 C.

The Work of the Physikalisch-Technische Reichsanstolt in 1911. Deals particularly with the electrical portion of the work. 1500 w. Elect'n, Lond—Sept. 20, 1912. No. 36485 A.

Lamp Tests

Electrical Measurements with Special Reference to Lamp Testing. Evan J. Edwards. Describes methods used in a photometric and lamp testing laboratory. 1500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34083 F.

Magnesium

Resistivity Determination of Magnesium by Kelvin Double Bridge Method. E. F. Northrup. Describes method, apparatus and results of a measurement to determine the resistivity and temperature coefficient of a bar of magnesium metal in the temperature range, 20° to 155° C. 1800 w. Met & Chem Engng—May, 1912. No. 32649 C.

Meters

Measurement of Electrical Energy by Recording Watt-Hour Meters. Joseph B. Baker. Illustrates and describes types of motor meters for direct-current circuits. 3500 w. Elec Rev & W Elect'n—Nov. 18, 1911. No. 28158.

Measurement of Electrical Energy by Recording Watt-Hour Meters. Joseph B. Baker. Illustrates and describes the construction and operation of the Westinghouse induction type integrating watthour meter and gives a study of all commercial induction meters. 3000 w. Elec Rev & W Elect'n—Dec. 23, 1911. Serial. 1st part. No. 28904.

A Comparison of American Direct-Current Switchboard Voltmeters and Ammeters. T. T. Finch and C. J. Huber. Gives results of various tests and measurements. Considers the performance of the instruments, and the determination of their structural constants and dimensions of parts. Ills. 3500 w. Bul Bureau of Stand—Oct., 1911. No. 29096 N.

Friction in Electricity Meters. Its Determination, Compensation, and Resultant Errors. Karl Schmiedel. Abstract from *Verband das Ver Zur Beforderung das Gowerbfleisses*. Shows how the total frictional torque of meters may be separated into its component parts and determined both absolutely and as a percentage of the driving torque. 1000 w. Elec Rev, Lond—Dec. 22, 1911. Serial. 1st part. No. 29452 A.

Some Considerations of Detail in the Design of Electricity Meters. Discusses details that are an annoyance to repairers and testers. 2500 w. Elec Rev, Lond—May 10, 1912. No. 32971.

Electricial Meters on Variable Loads. David Robertson. Deals both theoretically and experimentally with the behavior of electricity meters on variable loads. Describes experiments. 6500 w. Inst of Elec Engrs—May, 1912. No. 32973 N.

A New Moving-Coil Measuring Instrument for Direct and Alternating Current. Herr Gossen. Abstract trans. from *Elektrotechnische Zeit*. Descriptive. 1200 w. Elect'n, Lond—June 7, 1912. No. 33772 A.

Measurement of Alternating Current of Low Value. M. G. Newman. Explains method and reports tests and results. Ills. 2000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34082 F.

The Action of the Discs in A. C. Meters (Ueber die Voränge in der Scheibe eines Wechselstrommotorzählers). W. Rogowski. Description of the interior mechanism of meters. 4500 w. Elektrotechnik u Maschinenbau—Nov. 5, 1911. No. 28841 D.

Metering on Three-Phase Systems. L. T. Robinson. Detailed discussion of a number of arrangements of transformers and meters. 3000 w. Gen Elec Rev—June, 1912. No. 33374 C.

A Study of Three-Phase Wattmeter Connections. Charles R. Riker. Gives curves of value in understanding the relations between the current and voltage. 2000 w. Elec Jour—Sept., 1912. No. 36048.

Practical Notes on Meter Errors. S. M. Powell. Notes from a paper by A. Durand, read before the 1911 Congress of Electricity at Turin. 3500 w. Elec Rev, Lond—Aug. 30, 1912. No. 35868 A.

Notes on the Constancy of Integrating A. C. Meters in Relation to Road and Railway Transport. Describes tests made to determine whether supply meters are detrimentally effected by travelling by road or rail. 1500 w. Elect'n, Lond—Feb. 2, 1912. No. 30392 A.

Metering Large Direct-Current Installations. F. V. Magalhaes. A summary of methods now used, with suggestions. 1200 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34080 F.

Meter Practice for Small Central Stations. Guy R .Grove. Suggestions for the testing of meters and remarks on their importance. 2500 w. Elec Rev & W Elect'n—May 25, 1912. No. 33087.

Small Central-Station Meter Practice. Guy R. Grove. Discusses the keeping of polyphase meters in proper calibration, their installation, testing, etc. 3000 w. Elec Rev & W Elect'n—Aug. 17, 1912. No. 35267.

Sangamo Ampere-Hour and Watt-Hour Meters. Joseph B. Baker. Illustrated detailed description. 1500 w. Elec Rev & W Elect'n—Feb. 24, 1912. Serial. 1st part. No. 30774.

The Use of Meters in Railway Carriages (De l'Emploi des Compteurs sur les Voitures de Tramways). M. Delthil. Types of electrical meters adapted for use, and results obtained by their use. Discussion. Ills. and plates. 1600 w. Soc Belge des Elec—Feb., 1912. No. 32749 E.

The Electric Prepayment Meter (Les Compteurs Électriques). A. Iliovici. Principles of construction; advantages and disadvantages of the several types of apparatus. Ills. Serial. 1st part. 6000 w. Tech Mod—Sept. 15, 1912. No. 36674 D.

Making Millions of Electric Meters. Fred H. Colvin. Illustrates and describes methods which are the result of long experience. 4000 w. Am Mach—Dec. 21, 1911. No. 29131.

The Latest Comptometers of the Isaria Electric Co. (Die neuesten Zähler der Isaria-Elektro-Gesellschaft). M. Wiesengrund. Describes and illustrates the various new types of recording meters. 4500 w. Elek u Masch—July 28, 1912. No. 35557 D.

Meter Testing

Electric-Meter Testing in the Second New York Public Service District. Charles F. Hunter. Information concerning the requirements and results of tests. 1200 w. Elec Wld—Jan. 20, 1912. No. 29641.

Wheatstone Bridge—Rotating Standard Method of Testing Large Capacity Watt-Hour Meters. C. H. Ingalls and J. W. Cowles. Describes the method and gives results of tests. 1000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34092 F.

Switchboard Connections for Testing Meters. G. C. Cassard. Discusses the testing of ammeters by the portable shunt and millivoltmeter method. 1800 w Power—June 11, 1912. No. 33632.

Rating Curves for Electric Meters (Die Fehlerkurve von Elektrizitätszählern mit rotierendem Anker und die experimentelle Bestimmung der ihre Gestalt bedingenden einzelgrössen). K. Schmiedel. Method of theoretically determining curves for individual meters, and manner of application. Serial. 1st part. 4000 w. Elektrotech u Maschinenbau—Nov. 19, 1911. No. 28844 D.

Motor Tests

Instrument Testing Methods and Equipment for Central Stations. E. P. Peck. A discussion of motor tests. 2000 w. So Elect'n—June, 1912. No. 33403.

Permeability

Permeability Measurements with Alternating Current. L. T. Johnson and J. D. Ball. Deals with the general relations between maximum flux density, maximum exciting current, and magnetizing current. Ills. 1500 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34863 F.

A Method of Measuring Permeability by Means of Alternating Currents. R. Beattie and H. Gerrard. Describes a method depending essentially upon the fact that hysteresis loss per cycle is determined by the maximum value of the flux or of the current. Ills. 1800 w. Elect'n, Lond—Dec. 22, 1911. No. 29457 A.

Photometry

See same heading, under *Lighting*.

Power Efficiency

Determination of Power Efficiency of Rotating Electric Machines. E. M. Olin. Gives a method for establishing the ratio of load loss to the losses indicated by the no-load measurements. 5500 w. Pro Am Inst of Elec Engrs — July, 1912. No. 34854 F.

Pyrometry

Electric Heat Measurement and Remote Indicators with Especial Regard to Thermo-electric Methods (Elektrische Temperaturmessung und Fernablesung unter besonderer Berücksichtigung des thermoelektrischen Verfahrens). A. Schwartz. A technical discussion of the operation of electric pyrometers. Ills. Serial. 1st part. 5500 w. Zeit des Ver deutscher Ing—Feb. 10, 1912. No. 31358 D.

Rate Computers

A Mechanical Computer for Electric Energy Rates. W. H. Edmondson. Describes a device in the form of a slide-rule. 600 w. Elec Wld—June 22, 1912. No. 33888.

Recorder

Human Accuracy: Multi-Recorder for Lighting Phenomena and Switching. E. E. F. Creighton, H. E. Nichols, and P. E. Hosegood. Describes a new instrument which will record the time to the second of a phenomenon of any kind that can be made to close an electrical contact. Describes the manner of operation. Ills. 8500 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33246 F.

Rheostats

Notes on Rheostats. Considers rating, and on faults and troubles common to most rheostats. 2500 w. Elec Rev, Lond—Feb. 23, 1912. No. 31015 A.

Carbon-Plate Rheostats. Charles R. Moore. A report of experiments to supply data for the design of such apparatus. Ills. 1200 w. Elec Rev & W Elect'n—April 6, 1912. No. 31839.

An Automatic Water Rheostat for Absorbing Excess Coasting Energy in a Three-Phase Railway. Brief illustrated description of apparatus installed on the new Giovi Ry., Italy. 600 w. Eng News—May 2, 1912. No. 32566.

Standardization

A Determination of the International Ampere in Absolute Measure. E. B. Rosa, N. E. Dorsey, and J. M. Miller. Abstract of an article in the *Jour. of the Washington Acad. of Sci.* Explains the work and gives results. 1800 w. Elect'n, Lond—Jan. 19, 1912. No. 30158 A.

Standardization. H. F. Chadwick. Explains cases where a general standardization is possible and outlines the work of the Bureau of Standards and of various societies. 2500 w. Elec Jour—April, 1912. No. 32179.

Electrochemical and Electrothermal Calculations. Carl Hering. Abstract from paper read before the Am. Elec.-Chem. Soc. Gives recommendations by the writer for standardization of terms, units, nomenclature, etc. 1500 w. Min & Engng Wld—April 13, 1912. No. 31973.

Stray Currents

Measuring Stray Currents in Underground Pipes. Carl Hering. Describes methods devised by the writer and used with success in a practical case. 5000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34078 F.

Stresses

Some Mechanical Consideration of Transmission Systems. T. A. Worcester. Reviews the stresses which must be considered and points out some of the means which have been resorted to to meet special conditions. Ills. 3500 w. Pro Am

Inst of Elec Engrs—May, 1912. No. 33249 F.

Synchroscope

The Weston Synchroscope. C. V. Drysdale. Explains the principle and construction and reports tests of this device for synchronoizing alternators. Ills. 1500 w. Elect'n, Lond—Dec. 8, 1911. No. 29040 A.

Telemetry

See Signalling, under MARINE AND NAVAL ENGINEERING.

Temperatures

Temperatures and the Properties of Matter. E. F. Northrup. Reviews investigations in this field, and discusses the relation between temperatures and the facts known experimentally. 5000 w. Met & Chem Engng—June, 1912. No. 33414 C.

Testing Methods

Instrument Testing Methods and Equipment for Central Stations. E. P. Peck. First article of a series dealing with the laboratory, care and use of instruments, checking watt-hour meters, and tests of electrical apparatus. 2000 w. So Elect'n—Dec., 1911. Serial. 1st part. No. 28774.

Instrument Testing Methods and Equipment for Central Stations. E. P. Peck. Describes methods of checking watt-hour meters and testing polyphase watthour meters. Ills. 2500 w. So Elect'n—May, 1912. No. 32637.

Units

Tests of Hydro-Electric Generating Units. A. J. Soper and K. R. McKinnon. Directs attention to the value of operating tests on both generators and turbines, giving a detailed account of the most approved testing methods. Ills. 8500 w. Can Elec News—June, 1912. No. 33652 C.

The Myrawatt. H. G. Scott and Haylett O'Neill. Introduces a new unit of power which, if accepted, will afford a basis of comparison of all converters of energy, thermal and mechanical. 700 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34870 F.

See also Units of Energy, under MECHANICAL ENGINEERING, *Measurement.*

Voltage

Determining Voltage at Distribution Center of Central Station System. Victor C. Vance. Diagrams and description of a compensating volt-meter, explaining its work. 1500 w. So Elect'n—March, 1912. No. 31099.

Measurements of Voltage and Current Over a Long Artificial Power-Transmission Line at 25 and 60 Cycles per Second. A. E. Kennelly and F. W. Lieberknecht. Describes in detail a series of measurements over a line installed at Harvard University. 5000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34060 F.

Measurements of Maximum Values in High Voltage Testing. C. H. Sharp and F. M. Farmer. Describes methods aiming at improved accuracy in testing. Ills. 1600 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34088 F.

Wattmeters

Duddell-Mather Wattmeters for Measuring Dielectric Losses at 30,000 Volts. Brief illustrated description of two wattmeters for testing cables. 600 w. Elect'n, Lond—Jan. 12, 1912. No. 29894 A.

Compensating Wattmeters. A. L. Ellis. Explains the characteristics of such instruments, the tests for errors, giving information related to these meters. 2500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34086 F.

The Behavior of Direct-Current Watt-Hour Meters More Especially in Relation to Traction Loads, with Notes on Erection and Testing. S. W. Melsom and W. H. Eastland. Describes tests of various types under working conditions, and gives recommendations regarding the setting up and testing of meters. Ills. 4500 w. Inst of Elec Engrs—May, 1912. No. 33263 N.

The Testing of Large Watt-Hour Meters on Fluctuating Loads. F. A. Laws and C. H. Ingalls. Illustrates and describes an ingenious arrangement of apparatus for shunting a portable standard watt-hour meter of 40 amp rating, so as to carry a total measured direct current of 2,000 amp. 1000 w. Elec Wld—June 15, 1912. No. 33738.

A New Form of Candles-per-Watt Meter for Incandescent Electric Lamps. Herbert E. Ives. Gives a parallel description of the candle-power photometer as formerly used and of an ideal specific output meter, showing the requirements. Ills. 3000 w. Elec Wld—June 8, 1912. No. 33613.

Two-Wattmeter Method of Measuring Power in Three-Phase Circuits. D. H. Ogley. Brief explanation. 300 w. Elec Rev, Lond—Dec. 1, 1911. No. 28753 A.

Improper Watthour-Meter Connections. C. A. Howell. Shows the effect of improper connection on meter. 500 w. Elec Wld—June 15, 1912. No. 33739.

Wind Velocity

The Electrical Measurement of Wind Velocity. J. T. Morris. Gives details of a method in which an electrically heated wire is kept at a constant temperature when exposed to a current of air. Describes experiments and gives results. 3500 w. Elect'n, Lond—Oct. 4, 1912. No. 36831 A.

New Instruments for Measuring Air Velocity (Neuere Instrumente zur Messung der Luftgeschwindigkeit). Carl Wieselsberger. Describes recent improvements in the design of electrically connected anemometers. Ills. 2200 w. Elek Rund—Sept. 26, 1912. No. 36652 D.

Wire Tests

Examinations and Tests of Rubber Covered Wire. Hugh T. Wreaks. Outlines the new 1911 code specifications and inspection plan. 3500 w. Elec Rev & W Elect'n—Jan. 13, 1912. No. 29549.

POWER APPLICATIONS

Agriculture

Electricity on the Farm. Putnam A. Bates. An illustrated discussion of the many applications of electricity for the betterment of the farmers' conditions and improved efficiency. 7000 w. Pro Am Inst of Elec Engrs — July, 1912. No. 34869 F.

Electricity as a Factor in Progressive Agriculture. E. P. Edwards. Read before the N. Y. Elec. Soc. Considers the possible and probable advantages to be expected from the use of electricity by the agricultural community. 4000 w. Mfrs' Rec—Feb. 8, 1912. No. 30329.

Electricity in Agriculture (Die Elektrizität in der Landwertschaft). Herr Kareis. Presenting some of the advantages electric power has over other motors on the farm. Serial. 1st part. 1000 w. Elektrotechniker—Jan. 25, 1912. No. 30532 D.

Electric Power on the Farm. Adolph Shane. Outlines an electric system, discussing a particular installation and explaining the advantages. Ills. 12500 w. Bul 25, Iowa State College—Oct., 1911. No. 33187 N.

Electricity in Rural Districts. J. C. Matthieu. Read before the Ohio Elec. Light Assn. Remarks on some of the advantages of electricity on the farm and possibilities for its use. 1500 w. Elec Rev & W Elect'n—Aug. 3, 1912. No. 35055.

Rural and Domestic Applications of Electricity. Frank Koester. Deals with opportunities for electric service. Ills. 2500 w. Elec Rev & W Elect'n—Jan. 27, 1912. Serial. 1st part. No. 29825.

The Application of Electricity to Agriculture (Les Applications de l'Électricité à l'Agriculture). Jean Escard. Discusses the artificial stimulation of plant growth by the use of electrical currents, and describes some experimental arrangements for study. Ills. Serial. 2 parts. Part I. 8000 w. Rev d'Electricité—June, 1912. No. 36176 D.

Agricultural Applications of Electricity. William Manktelow. Gives data collected from farms where electric driving is employed in the preparation of cattle food, threshing cereals, and other work. 1500 w. Elec Rev, Lond—Oct. 4, 1912. No. 36829 A.

Agricultural Uses of Electricity (Applications agricoles de l'élèctricité). P. Lecler. Reviews the possibilities for increasing the amount of work done and decreasing physical labor on farms, and gives tables showing the consumption of power throughout the months of the year. Diagrams. 9500 w. Bull Soc Int d'Electriciens—July, 1912. No. 36668 F.

Is the Action of Continuous Current Through the Soil Harmful to Plants, and Why? (Ist Gleichstrom im Boden für Pflanzen schädlich und warum?) .Erich Schneckenberg. Investigations showing that the action is harmful. 1500 w. Elektrochem Zeit—Sept., 1912. No. 36644 D.

Teaching the Farmer How to Use Electricity. Thomas Commerford Martin. Illustrated account of a plan of the Boston Edison Co. to show to farmers the applications of electricity to farm apparatus. 1600 w Sci Am—Aug. 24, 1912. No. 35414.

Electric Motors for the Operation of Farm Machinery. Frank Koester. Illustrates and describes various applications. 4500 w. Elec Rev & W Elect'n—Feb. 24, 1912. No. 30773.

Electricity in Agriculture. Frank Koester. Discusses its use in the transportation of farm products, in irrigation, and the electric forcement of vegetation. Ills. 4000 w. Elec Rev & W Elect'n—March 23, 1912. No. 31499.

Electric Power Applications on the Farm. Frank Koester The present article discusses electric plowing, and electrically operated refrigerating plants. Ills. 2500 w. Elec Rev & W Elect'n—April 20, 1912. No. 32235.

See also Radioactivity, under *Electro-Physics;* Motor Plows, under *Power Applications;* Isolated Plants, under *Generating Stations;* and Motor Plows, under MECHANICAL ENGINEERING, *Automobiles.*

Astronomical Equipment

Electrical Installation of Mount Wilson Solar Observatory. Howard S. Knowlton. Illustrates and describes the equipment for operating the large telescope, and the various auxiliary apparatus. 3500 w. Elec Wld—March 23, 1912. No. 31505.

Bakeries

Electricity in Bakeries. Illustrates and describes interesting installations. 3500 w. Elec Rev & W Elect'n—March 16, 1912. No. 31226.

Bascule Bridges

See Bascule, under CIVIL ENGINEERING, *Bridges*.

Breweries

Electricity in Breweries. An analysis of the operating conditions, with information on the selection of motors, h.p. requirements, and power data on six installations. Ills. 4000 w. Elec Rev & W Elect'n—April 27, 1912. No. 32400.

Brick Machinery

Electric Power in Brick-Making Plants. Gives data secured from plants using motors and compares various methods of drying. Ills. 4500 w. Elec Rev & W Elect'n—May 11, 1912. No. 32821.

Chicago Library

Electricity in Harper Memorial Library. Illustrated description of the lighting and motor-service features of the new million-dollar library building of the University of Chicago. 2000 w. Elec Wld—Sept. 21, 1912. No. 36236.

Coast Defense

The Utilization of Electricity in United States Coast Defense. L. B. Bender. Illustrates and describes important applications. 3000 w. Elec Wld—March 30, 1912. No. 31705.

Compressors

Centrifugal Compressors. C. G. Rally. Considers single-stage and multi-stage compressors as developed by the Gen. Elec. Co. Ills. 2500 w. Jour Ohio Soc of Mech, Elec & Steam Engrs—Vol. IV, No. 1. Paper 174. No. 28335 F.

See also Air Compressors, under MECHANICAL ENGINEERING, *Power and Transmission*.

Construction Work

Electricity in Construction Work. Illustrated account of the application of electricity to the use of contracting firms for power and light. 3000 w. Elect'n, Lond—Aug. 30, 1912. No. 35874 A.

Cranes

See same heading, under MECHANICAL ENGINEERING, *Transporting and Conveying*.

Creameries

Electricity in Creameries. Illustrated article analyzing the operating conditions in creameries, and giving information from numerous plants. 3500 w. Elec Rev & W Elect'n—Sept. 7, 1912. No. 35826.

Department Stores

Electrical Construction in Department Stores. Notes on equipment and installation. Ills. 2500 w. Elec Rev & W Elect'n—July 6, 1912. No. 34298.

Electricity in the Department Store. E. F. Tweedy. Gives engineering and cost data for illumination and motors based upon central-station service. 2500 w. Elec Wld—July 6, 1912. No. 34286.

Electric Drive

Electric Drive for Brass-Finishing Plants. Discusses features of such installations and presents tabulated information relative to five typical plants. Ills. 4500 w. Elec Rev & W Elect'n—July 20, 1912. No. 34693.

Electric Drive for Carpet Cleaning. Illustrated description of a Chicago plant, and information concerning a number of combined plants. Ills. 1800 w. Elec Rev & W Elect'n—July 6, 1912. No. 34297.

Electricity in Sash and Door Plants. Illustrated article explaining the advantages of motor-drive in this field, and giving tabulated information. 4000 w. Elec Rev & W Elect'n—July 27, 1912. No. 34815.

Motor-Operated Roll Lathes. E. M. Wise. Explains the advantages of adjustable speed motors, and considers the selection of a motor for a roll lathe. Ills. 1000 w. Elec Jour — July, 1912. No. 34843.

See also Electric Drive, under MECHANICAL ENGINEERING, *Power and Transmission*, and Electric Power, under MINING AND METALLURGY, *Iron and Steel*, also under *Mining*.

Electric Energy

Economics in Electric Theatre Working. Calls attention to points where saving can be made. 1500 w. Elec Rev, Lond—Nov. 17, 1911. No. 28342 A.

Electric Furnaces

See same title under MECHANICAL ENGINEERING, *Machine Works and Foundries*.

Electric Hoists

Electrically-Driven Winding Engines. Bertram Wood. Read before the Victorian Inst. of Elec. Engrs. Considers advantages, and discusses systems, giving results of tests in mining plants. 2000 w. Aust Min Stand—Nov. 30, 1911. Serial. 1st part. No. 29602 B.

See also same title under MECHANICAL ENGINEERING, *Transporting and Convey-*

ing; and same heading, under MINING AND METALLURGY, *Mining.*

Electric Locomotives

See same heading, under RAILWAY ENGINEERING, *Motive Power and Equipment.*

Electrical Machinery

The Heat Paths in Electrical Machinery. Harold D. Symons and Miles Walker. Deals with methods of predetermining the temperature rise in electrical machinery, with an account of experiments. Ills. 12000 w. Inst of Elec Engrs—Jan. 25, 1912. No. 30297 N.

Heating Effects in Electrical Machinery (Erwärmung elektrischer Maschinen). F. Niethammer. Calculations based on the investigations by H. D. Symons and Miles Walker in regard to methods of insulation to counteract the heat paths. 3000 w. Elek Kraft u Bahnen—March 4, 1912. No. 31370 D.

Thermal Conductivity and Resistivity. Reviews results obtained by different experimenters. 1800 w. Wis Engr—April, 1912. No. 32411 C.

High-Speed Electrical Machinery. F. H. Clough. Read before the Rugby Engng Soc. Considers the difficulties in developing high-speed generators and the problems in connection with the design. 5000 w. Mech Engr—April 5, 1912. No. 31991 A.

High-Speed Electrical Machinery. F. H. Clough. Abstract of a paper read before the Rugby Engng. Soc. Discusses problems of balancing, ventilation, critical speeds, etc. 2500 w. Elect'n, Lond—April 19, 1912. No. 32499 A.

Notes on National and International Standards for Electrical Machinery. Dr. Robert Pohl. Read before the Inst. of Elec. Engrs. A discussion of the subject and its importance, with suggestions. 10500 w. Engng—Jan. 26, 1912. No. 30322 A.

Electricity in Armor Plating Shops (Die Elektrizität in Werkstätten für Blech- und Panzerplattenbearbeitung). O. Pollok. Some of the powerful machines in this heavy work described. Ills. 4500 w. Stahl u Eisen—Feb. 1, 1912. No. 30512 D.

Electric Power

Electric Power for Railway Shops. Abstract of a committee report to the Assn. of Ry. Elec. Engrs. 1500 w. Ry Age Gaz—Nov. 10, 1911. No. 27781.

Power Requirements in Furniture Factories. Illustrated study of the advantages of the electric drive. 6000 w. Elec Rev & W Elect'n—Jan. 20, 1912. No. 29864.

Electricity in Smoked-Meat Plants. Illustrated article dealing particularly with sausage grinding and discussing points in connection with the adoption of electric drive, giving data on installations. 2500 w. Elec Rev & W Elect'n—Aug. 3, 1912. No. 35054.

Electricity in Cooper Shops. Discusses operating conditions and gives tabulated data concerning several plants. 2500 w. Elec Rev & W Elect'n—Sept. 28, 1912. No. 36385.

Electricity in Paint and Varnish Plants. Shows how central-station power has effected savings, and gives data on four establishments. Ills. 3000 w. Elec Rev & W Elect'n—Oct. 5, 1912. No. 36595.

Electricity in Plaster and Lime Plants. Explains its advantages and gives data of four typical plants. Ills. 2500 w. Elec Rev & W Elect'n—Oct. 12, 1912. No. 36777.

See also same headings, under MINING AND METALLURGY, *Lead and Zinc; Mining;* Shop Appliances, under MECHANICAL ENGINEERING, *Machine Works and Foundries;* and Electric Drive, under MECHANICAL ENGINEERING, *Power and Transmission.*

Electric Traction

High Power Technique and Electric Traction at the Turin Exhibition (Starkstromtechnik und elektrische Traktion an der internationalen Ausstellung Turin 1911). Dr. W. Kummer. Mentions types of generators, transformers and electric motor locomotives. Ills. 3500 w. Schweiz Bau—Nov. 25, 2911. No. 28820 B.

Electric Transport. A general illustrated survey, mainly of work in the United Kingdom. 15000 w. Engr, Lond—Nov. 24, 1911. Sup. No. 28672 A.

See also same heading, under RAILWAY ENGINEERING, *Motive Power and Equipment.*

Electrotyping

Electricity in Engraving and Electrotyping Plants. Discusses the advantage of individual motor drive in this industry. Tabulated data sheet. Ills. 3500 w. Elec Rev & W Elect'n—Sept. 21, 1912. No. 36226.

See also same heading, under *Electro-Chemistry.*

Excavators

See same heading, under CIVIL ENGINEERING, *Construction.*

Fans

The Control of Motor-Driven Ventilating Fans. George J. Kirchgasser. Illustrates and describes types of regulators for different conditions. 2500 w. Elec Rev & W Elect'n—Aug. 17, 1912. No. 35268.

The Selection of an Electric Fan. H. M. Scheibe. Considers the subject from the standpoint of the user. 1600 w. Elec Jour—Aug., 1912. No. 35361.

See also Ventilation under MINING AND METALLURGY, *Mining.*

Industrial

Procedure in Shop Electrification. Earle D. Jackson. Discusses practical methods for systematic test of working requirements. 1800 w. Engineering Magazine—Jan., 1912. No. 29204 B.

Industrial Electric Service in the Southern States. A. D. Quackenbush. Illustrates and describes the 11000-volt lines, and the motor equipment of two large concerns near Mobile, Ala. 2500 w. Elec Wld—March 2, 1912. No. 30994.

Relative Advantages of Group and Individual Motor Drive and the Cost of Industrial Electric Power. C. W. Drake. Calls attention to some of the more important factors bearing on the type of drive to be used, and the power supply. General discussion. 6500 w. Pro Engrs' Soc of W Penn—Oct., 1911. No. 28240 D.

Contracts for the Supply of Electric Power from the Manufacturer's Point of View. H. E. M. Kensit. Discusses technical clauses which lead to misunderstanding and cause trouble. 2500 w. Can Engr—Nov. 16, 1911. No. 28147.

Will It Pay to Electrify the Shops? Alexander D. DuBois. First of a series of articles discussing an old subject in a new way. 5000 w. Ind Engng—Jan., 1912. Serial. 1st part. No. 29994 C.

See also Industry, under *Miscellany.*

Mills

Electric Power in Flour and Grist Mills. Gives results of many tests showing what results may be expected under various conditions. Ills. 5000 w. Elec Rev & W Elect'n—Feb. 17, 1912. No. 30652.

See also Mill Motors, under *Dynamos and Motors.*

Mining

See Electric Power, under MINING AND METALLURGY, *Mining.*

Motor Plows

Motor Plowing from an Industrial Standpoint (Das Motorpflugwesen vom Standpunkte der Industrie). Dr. Martiny. Extensive illustrated review of the commercial possibilities of the motor plow. Serial. 1st part. 10,000 w. Motorwagen—March 20, 1912. No. 32060 D.

See also same heading, under MECHANICAL ENGINEERING, *Automobiles.*

N. Y. Library

The Electrical Equipment of the New York Public Library. M. C. Turpin. Brief illustrated description of the generating and heating equipment and motor applications. 2500 w. Elec Jour—Feb., 1912. No. 30842.

Ovens

American Electric Ovens (Les Fourneaux électriques de cuisine américains). H. Marchand. Describes new electric cooking ovens. Ills. 1600 w. Électricien—Dec. 9, 1911. No. 29783 D.

Panama Canal

See same heading, under CIVIL ENGINEERING, *Waterways and Harbors.*

Paper Making

Electric Drive for Paper Machines. J. S. Henderson, Jr. Explains the operating characteristics of paper machines, types of drive, control, etc. Ills. 2500 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34859 F.

Application of Electric Drive to Paper Calenders. E. C. Morse. Considers the finishing department of a paper mill and particularly the motor drives for three types of paper calenders. Ills. 7000 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34868 F.

Paper Mill Electrification. Matthew C. Coates. Illustrates and describes particulars of an electrically-operated paper mill just completed. 3000 w. Aust Min Stand—Sept. 28, 1911. No. 28005 B.

Phonograph

A New Phonograph. Illustrated description of the method developed by S. Lifschitz, a new optical phonograph. 1000 w. Sci Am—April 27, 1912. No. 32333.

Power Requirements

Power Requirements of the Modern Laundry. A study of the opportunities for electric drive. 6500 w. Elec Rev & W Elect'n—Jan. 6, 1912. No. 29495.

Printing Plants

Electricity in Printing. Gives data on control, horse power requirements, electric heating and selection of motors for printing machines. Ills. 4500 w. Elec Rev & W Elect'n—May 18, 1912. No. 32951.

Pumping Stations

Motor-Driven Fire Pumps and Their Control. George J. Kirchgasser. Illustrates and describes types of controllers used for this service. 2000 w. Elec Rev & W Elect'n—Nov. 25, 1911. No. 28300.

Equipment and Wiring in an Electrically Driven Fire-Pump Installation. Illustrated detailed description of a modern plant in Chicago. 2500 w. Elec Rev & W Elect'n—July 13, 1912. No. 34417.

See also same heading, under CIVIL ENGINEERING, *Water Supply.*

Refrigeration

See same heading, under MECHANICAL ENGINEERING, *Heating and Cooling.*

Rolling Mills

Discussion on "Electrically Driven Reversing Rolling Mills." Chicago, June 28, 1911. Discusses Wilfred Sykes' paper. 5500 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28199 F.

Some General Principles Involved in the Electrical Driving of Rolling Mills. C. Antony Ablett. Abstract of paper read before the Yorkshire Loc. Sec. of the Inst. of Elec. Engrs. Describes two devices designed for rendering the employment of flywheels useful on electrically-driven rolling mills. 2500 w. Elec Engr, Lond—Jan. 12, 1912. Serial. 1st part. No. 29890 A.

See also same heading, under MINING AND METALLURGY, *Iron and Steel.*

Safety Lamps

See same heading, under MINING AND METALLURGY, *Coal and Coke.*

Standards

Notes on National and International Standards for Electrical Machinery. Dr. Robert Pohl. Urges the desirability of the revision of the British Standard Specification for electrical machinery. Discusses features and alterations. 8500 w. Inst of Elec Engrs—Dec., 1911. No. 29036 N.

Stone Cutting

Electricity in Stone-Cutting Plants. Gives operating data on numerous plants and shows the opportunity for the sale of power. Ills. 4000 w. Elec Rev & W Elect'n—Aug. 17, 1912. No. 35264.

Electrical Plant at the Buxton Lime Firms' Quarries. Illustrated description of an interesting installation in Britain. 2000 w. Elec Rev, Lond—Jan. 12, 1912. No. 29892 A.

Terminals

Electrification of Railway Terminals. W. F. M. Goss. Abstract of an address before the City Club of Chicago. An outline of the investigation being made at Chicago and discussion of the proposed change of power. 3000 w. Ry Age Gaz—June 14, 1912. No. 33713.

Electric Power in Railway and Marine Terminals. R. H. Rogers. An account of what Seattle is doing to prepare itself for trade expected at the opening of the Panama Canal. Ills. 2000 w. Gen Elec Rev—June, 1912. No. 33383 C.

Electricity on the Whitby Bridge and Harbor Works. L. H. King. Illustrates and describes applications made of electric power during the work and the reliability of the apparatus. 1200 w. Elec Rev, Lond—Dec. 29, 1911. No. 29608 A.

Textile Work

The Application of Electrical Energy in Clothing Factories. H. O. Stewart. Considers its utilization for power and light, giving data of installations. Ills. 3500 w. Elec Rev & W Elect'n—Aug. 10, 1912. No. 35110.

Electric Driving for Mule Spinning. Albert Walton. Discusses the manner in which the problem of driving the self-acting mule by electricity has been treated and gives some of the results. Ills. 4000 w. Cassier's Mag — Nov., 1911. No. 28185 B.

Electrical Energy in Textile Mills. George K. Hutchins. Read before the Georgia Sec. of the Nat. Elec. Lgt. Assn. Explains some of the advantages and gives information concerning such installations. 3500 w. So Elect'n—Nov., 1911. No. 27981.

Valve Control

Motor and Control Equipment of Electrically Operated Valves. H. M. Gassman. A general statement of the operating conditions to be met and the principles which should govern the design of the equipment, particularly of large gate valves for water and steam connections. 1200 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33239 F.

Welding

See same heading, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

TRANSMISSION

Alternating Currents

Notes on Alternating Currents. Newton Harrison. Defines and explains important features in the consideration of alternating currents. 3000 w. Cent Sta—Nov., 1911. No. 27798.

Tables of Hyberbolic Functions in Reference to Long Alternating-Current Transmission Lines. A. E. Kennelly. Gives tables and directions for their use. 2500 w. Pro Am Inst of Elec Engrs—Dec., 1911. No. 28796 F.

Alternating Current on Shipboard. A. Norris. Detailed discussion of its adaptability to the requirements, and a statement of its advantages. 10800 w. Jour Am Soc of Nav Engrs—Feb, 1912. No. 31491 H.

Atmospheric Phenomena

Atmospheric Phenomena and Their Relation to the Production of Over Voltages in Overhead Electric Transmission Lines. G. V. Adendorff. Abstract of a paper read before the S. African Inst. of Elec.

Engrs. Investigates the nature of the varieties of atmospheric phenomena, their probable effect, and means of protection. 1800 w. Elec Rev & W Elect'n—Nov. 4, 1911. Serial. 1st part. No. 27686.

Cables

Raising the Standard of Cable Specifications. Alden W. Welch. A recommendation for good electrical conductors and a method for tabulating the requirements. 1500 w. Elec Wld—Aug. 17, 1912. No. 35271.

Reinforcement of Direct-Current Three-Wire Feeders. A. W. Welch. Deals with economies and practical considerations governing the choice of cables larger than necessary for present loads. 1500 w. Elec Wld—Dec. 2, 1911. No. 28596.

The Inter-Relation of Capacity in Three-Phase Three-Core Cables. A. B. Clark. Shows how from two capacity measurements all the other combinations can be calculated. 800 w. Elec Rev, Lond April 5, 1912. No. 31905 A.

The Inter-Relation of Capacity in Three-Phase Three-Core Cables. W. T. Maccall. Mathematical determination of the capacity current. 500 w. Elec Rev, Lond—June 21, 1912. No. 34206 A.

High-Tension Cables (Ueber Hochspannungskabel). Paul Humann. Calculations and graphs for determining diameters on single or many-wire cables relative to voltage required. Serial. 1st part. 4200 w. Zeit d Oest Ing u Arch Ver—Nov. 24, 1911. No. 28831 D.

The Manufacture of Telephone Cables at the Woolwich Works of Messrs. Siemens Brothers & Co., Ltd. Illustrated description of the manufacturing processes of dry-core air-space and telephone cables. 2500 w. Elect'n, Lond—Feb. 23, 1912. No. 31017 A.

Laying Out a Cable System Through the River Trave. Brief illustrated description of the methods employed. 700 w. Sci Am Sup—July 20, 1912. No. 34655.

High-Potential Cable Testing at Boston. Illustrated description of methods employed to prevent cable breakdowns. 1000 w. Elec Wld—Aug. 17, 1912. No. 35270.

Method and Cost of Transferring Three 100-Pair Telephone Cables from the Original to a Combination Line. R. E. Froisette. Ills. 800 w. Engng & Con—Dec. 13, 1911. No. 28964.

See also Submarine Cables, under *Communication;* Cable Testing, under *Measurement*, and Factories, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Catenary Lines

D. C. Catenary Experiences of the Connecticut Company. Gives results to date of experiments made with six different types of catenary line construction for the same service conditions. Also editorial note. 5000 w. Elec Ry Jour—Nov. 18, 1911. No. 28148.

Conductors

Sags and Tensions of Overhead Conductors. Alfred Still. Gives an analytical method for determining the mechanical constants of transmission lines. 2500 w. Elec Wld—May 11, 1912. No. 32804.

Aluminum Conductors for Overhead Transmission Lines. Charles L. Johnson. Describes British practice. 2000 w. Elec Wld—July 6, 1912. No. 34285.

The Characteristics of Copper and Aluminum Overhead Line Conductors. E. V. Pannell. Gives a few rules for the comparison of line conductors and deductions applying to British conditions. 3000 w. Can Engr—July 18, 1912. No. 34661.

Network of Electrical Conductors. Francis B. Crocker. Discusses principles and methods for designing and calculating network distribution systems. 2000 w. Elec Wld—April 13, 1912. Serial. 1st part. No. 31963.

The Characteristics of Copper and Aluminum Overhead Line Conductors. E. V. Pannell. Gives a few rules by the use of which a comparison of line conductors may be made and deductions applying to British conditions. 1800 w. Elec Rev, Lond—May 10, 1912. Serial. 1st part. No. 32972.

Conduits

General Specifications for Underground Electric Conduit. R. E. Froisetti. 3000 w. Engng & Con—Jan. 10, 1912. No. 29525.

Underground Electric Distribution. William B. Ligon. A comparison between tile and fiber conduits on the market to-day. 1700 w. Munic Engng—May, 1912. No. 33192 C.

Notes on Underground Conduits and Cables. C. T. Mosman. An account of tests made on a conduit system. 4500 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33253 F.

Converters

Changing Alternating to Direct Current. C. A. Tupper. On the applications and usefulness of the rotary converter. Ills. 1800 w. Power—Dec. 5, 1911. No. 28627.

A New Method of Converting Alternating to Direct Current. E. Falkenthal. Abstract trans. from *Elektro. Zeit.* Consists in employing a slight artificial magnetic leakage in the yoke of a transformer to operate the swing of a pivoted polarized armature. 800 w. Elect'n, Lond—Dec. 8, 1911. No. 29039 A.

Three-Phase to Direct Current Conversion for Railway Purposes (Drehstrom-Gleichstrom-Umformerwerke für Bahnzwecke). Herr Idelberger. A brief sketch of the three types of machines for such conversion, and description of some of each type. Ills. 9300 w. Elek Kraft u Bahnen—June 4, 1912. No. 34518 D.

Corona Losses

Experiments on the Losses Due to Corona on Transmission Lines. H. Görges, P. Weidig, and A. Jaensch. Trans. from *Elek. Zeit.* Describes experimental work to determine corona losses at high pressure on transmission lines. 1500 w. Elect'n, Lond—Feb. 2, 1912. No. 30391 A.

Corona Losses Between Wires at High Voltages. C. Francis Harding. Gives results of tests recently made at Purdue University and compares the results obtained by various observers upon such a basis as to aid in the confirmation of formulae which may be generally used in tranmission line design. Ills. 2000 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34853 F.

Calculating Corona Losses in High-Tension Aerial Lines (Zur Berechnung der Koronaverluste auf Hochspannungs-Freileitungen). K. Zickler. Formulae and curves for such calculations. Serial. 1st part. 3200 w. Elk u Masch—Sept. 15, 1912. No. 36648 D.

Detectors

Ground Detectors for High Tension Circuits. J. W. Himmelsbach. Describes an apparatus that will notify the operator that a ground exists. Diagram. 700 w. Power—Aug. 20, 1912. No. 35280.

Direct Current

The Transmission of Electrical Energy by Direct Current on the Series System. J. S. Highfield. Abstract of paper before the Glasgow meeting of the I. E. E. Describes a pioneer installation and discusses circumstances which render the adoption of the series system preferable. 4500 w. Elect'n, Lond—June 14, 1912. No. 33919 A.

Earthing

"Earthing" as Defined in the Electricity Rules. W. Bolton Shaw. Paper and discussion before the Assn. of Min. Elec. Engrs. (Lancashire Branch). 4000 w. Ir & Coal Trds Rev—June 21, 1912. No. 34224 A.

Fault Location

The Location of Faults in Underground Cables (Sur la Localisation des Défauts dans les Cables Souterrains). M. E. Masson. Discussion of the several methods now in vogue. Diagrams. 7500 w. Bull Soc Int d'Électriciens—May, 1912. No. 33589 F.

Localizers, Suppressors, and Experiments. E. E. F. Creighton and J. T. Whittlesey. Application of localizers of faulty feeders and an arcing ground suppressor to the system of the Public Service Electric Co., and description of several experimental studies. Ills. 8500 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34862 F.

Feeder Distribution

How Far Will a Trolley-Car Run? Nicholas Stahl. Cites an example with the aim of bringing out more clearly the nature of the dependence of speed upon feeder copper capacity. 600 w. Elec Wld—Nov. 18, 1911. No. 28151.

Field-Control

Field-Control Problems in Direct-Current Machines. William G. Merowitz. Considers methods in use for varying the speed of direct-current motors; improving commutation in field-control, etc. 1000 w. Elec Wld—Jan. 6, 1912. No. 29519.

High Tension

The Design of High-Tension Electric Transmission Lines. John Greenhalgh. Gives rules and formulae for the practical questions of construction. 3000 w. Engineering Magazine—Oct., 1912. No. 36290 B.

Birds and High Tension Lines. William Manktelow. Discusses dangers to bird life and troubles to the system due to contact. 1000 w. Elec Rev, Lond—June 7, 1912. No. 33769 A.

The World's Pioneer High-Tension Transmission System. Illustrated account of the evolution of the generating and transmission system of the Telluride Power Co. in the Colorado Mountains. Also editorial note. 5500 w. Elec Wld—Nov. 18, 1911. Serial. 1st part. No. 28150.

A 100,000-Volt Transmission on the Roof of the Continent. Illustrates and describes the operating methods of the Central Colorado Power Co.'s system. 3000 w. Elec Wld—June 1, 1912. No. 33430.

Western Transmission Systems. Maps and a brief review of Western high tension system, giving the important features pertaining to each, with comparative data on all high tension systems of the world. 3000 w. Elec Wld—June 1, 1912. No. 33428.

World's Largest Transmission System. An outline of the operating system and service conditions of the Pacific Gas &

Electric Co. Ills. 3500 w. Elec Wld—June 1, 1912. No. 33429.

The High Tension Transmission System of the Hydro-Electric Power Commission of Ontario. Illustrates and describes this high-tension steel tower system operating at a potential 110,000 volts. Serial. 1800 w. Can Engr—July 25, 1912. No. 34874.

See also Protective Devices, under *Transmission.*

High Voltage

Notes on Control and Operation of High Voltage Transmission Systems. Charles P. Steinmetz. Explains dangers of switching between transformers and line, and how thev may be removed. 1700 from the records of the General Electric Co. Ills. 1500 w. Gen Elec Rev—June, 1912. No. 33371 C.

Some Problems of High Voltage Transmissions. Charles P. Steinmetz. Considers line insulation, voltage regulation, control of branch circuits, etc. 3000 w. Pro Am Inst of Elec Engrs—March, 1912. No. 31582 F.

Discussion on "Some Problems of High Voltage Transmissions," and "Characteristics of Protective Relays," New York, March 8, 1912. Papers by Charles P. Steinmetz, and by E. M. Hewlett, are discussed. 6500 w. Pro Am Inst of Elec Engrs—Aug., 1912. No. 35378 F.

The Southern Power Company's Transmission System. J. W. Fraser. Illustrated description of features of interest in the largest electrical generating and distributing system in the South. 7000 w. So Elect'n—March, 1912. No. 31096.

Highest-Voltage Transmission System in the World. Illustrated description of the plant of the Au Sable Elec. Co., supplying electricity to Bay City, Saginaw, and Flint, Mich. 2500 w. Elec Wld—April 13, 1912. No. 31962.

140,000-Volt Power Transmission. Illustrates and describes this line in Michigan, and also the generating plant on the Au Sable River. 3500 w. Eng News—May 16, 1912. No. 32916.

Insulation

Thickness of Electric and Thermal Insulation. Carl Hering. On the determination of relative thicknesses of insulation for different cores in order to retain the same resistance and same dielectric strength. 2500 w. Elec Wld—Nov. 25, 1911. No. 28314.

The Thickness of Insulation on Wires and Cables. J. H. Lendi. Considers the determination of the relations between diameter of wire and thickness of insulation for constant resistance and breakdown strength. 2000 w. Elec Wld—March 16, 1912. No. 31240.

The Standardization of Moulded Compositions Used in the Manufacture of Electrical Machinery and Apparatus. Harold D. Symons. Gives a classification for materials used for insulating purposes and for arc-proof materials, with remarks. 3000 w. Elec Rev, Lond—Nov. 3, 1911. No. 28016 A.

Notes on the Insulation Testing of Electrical Machines. A. P. M. Fleming, and R. Johnson. Explains causes of failures, discusses tests and their value, etc. 2500 w. Elec Rev, Lond—Nov. 17, 1911. No. 28341 A.

Measurement of Insulation Resistance in a Working A. C. Plant (Misura della Resistenze d'Isolamento in un Impianto a Corrente Alternativa durante l'Esercizio). Alberto Dina. Paper before the International Congress for Electrical Application. Serial. 1st Part. 2300 w. Industria—Oct. 1, 1911. No. 28474 D.

High Voltage Insulation. A. M. Gray and Andrew McNaughton. Discusses the dielectric strength of insulating materials and the conditions which affect it, the design of insulation for different purposes, etc. Ills. 3500 w. Can Soc of Civ Engrs —May, 1912. No. 33179 N.

Researches on High Tension Insulation. A. M. Gray and A. McNaughton. Illustrates and describes research work at McGill University. 3000 w. Can Elec News —May, 1912. No. 32536 C.

Homogeneous Insulations for Simple Electrical Conductors (Sur les Revêtements Isolants Homogènes pour Conducteurs Électriques Simples). M. Michard. Mathematical study. Discussion. Diagrams. 3200 w. Bul Soc Int d'Électriciens—April, 1912. No. 32753 F.

Insulators

The Line Insulator in Modern High Voltage Transmission Systems. F. W. Peck, Jr. Points out some of the limiting electrical characteristics of the series suspension insulator used on high voltage lines. 1500 w. Gen Elec Rev — June, 1912. No. 33380 C.

High-Tension Porcelain Line Insulators. J. Lustgarten. Abstract of paper read before the Manchester Sec. of the Inst. of Elec. Engrs. Discusses the properties of electrical porcelain, the various forms of pin and suspension insulators, their design and operating features. 2500 w. Elect'n, Lond—March 29, 1912. No. 31879 A.

Electrical Characteristics of the Suspension Insulator. F. W. Peck, Jr. Aims to show the general limiting features and characteristics of insulators in series and the cause of these characteristics. 3000 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33251 F.

The Manufacture of Porcelain Insulators. Dr. Alfred Gradenwitz. Illustrates and describes the processes of manufacture and the testing for leakage at high tension. 1000 w. Sci Am Sup—Aug. 3, 1912. No. 35028.

The Polarization E M F of a Mixture of Clay, Feldspar and Quartz. A. A. Somerville. Reports results of a study of temperature coefficients of electrical resistance, the properties exhibited, etc. 1000 w. Elec Wld—Aug. 24, 1912. No. 35437.

Lightning

Lightning Protection. E. J. Burdick. Abstract of paper read before the Cent. Elec. Ry. Assn. Considers briefly power house and substation protection, distribution, car, telephone terminal and line protection. 2200 w. Elec Ry Jour—Nov. 25, 1911. No. 28310.

Compression Chamber Lightning Arrester and the Protection of Distribution Circuits. E. E. F. Creighton and F. R. Shavor. Describes a new form of lightning arrester in which low cost was the principal motive of the design, discussing the effects it will have. Ills. 5000 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33245 F.

A New Method of Measuring the Efficiency of Lightning Conductors. Eric Wurm. Abstract trans. from *Elektro. Zeit.* Describes a new apparatus for determining the resistance to earth of a lightning conductor, two auxiliary earth connections being used in the measurement. 800 w. Elect'n, Lond—Dec. 8, 1911. No. 29041 A.

Lines

Transmission Lines versus Foreign Low-Potential Lines. J. G. Swain. A discussion of overhead line construction. 4000 w. Elec Ry Jour—June 15, 1912. No. 33750.

An Investigation of Transmission Line Phenomena by Means of Hyperbolic Functions. A. E. Kennelly. The distribution of voltage and current over artificial lines and other phenomena. Mathematical. 2500 w. Elec Wld—Aug. 10, 1912. No. 35113.

The Propagation of Electric Energy by Standing and Traveling Waves. John F. H. Douglas. Reports an experimental test of an artificial transmission line. 1500 w. Elec Wld—Aug. 10, 1912. No. 35114.

Artificial Power-Transmission Line. A. E. Kennelly and H. Tabossi. Describes constructive details and results of tests of a 1,500-mile single-phase artificial transmission line built for experimental purposes. Ills. 1800 w. Elec Wld—Feb. 17, 1912. No. 30487.

A Machine for the Calculation of Supply Networks. J. Nowak. Abstract translation from *Elektrotechnische Zeit.* Describes a machine for determining the currents in the various cables, and the pressure-drops from feeding-point to junction and from one junction to another. Ills. 2500 w. Elect'n, Lond—Feb. 16, 1912. No. 30788 A.

Lines for Current Collectors in Electric Railways (La Ligne de Prise de Courant dans les Chemins de fer électriques). Gustav L'Hoest. Discusses third rail, single and double catenary, bipolar, and other systems of conveyors. Ills. 6600 w. Soc Belge des Elec—Dec., 1911. No. 30600 E.

The Southern Power Company's Transmission Lines. J. W. Fraser. Briefly reviews the history of transmission in America, and gives an illustrated detailed description of the 100,000 volt lines of this company. 5000 w. Can Soc of Civ Engrs—Nov. 23, 1911. No. 31295 N.

Line Construction

Erection of Transmission Lines for the Utah Light & Railway Company. L. J. Riter. Gives details and erection cost data of double-circuit steel towers. Ills. 3000 w. Elec Wld—Aug. 3, 1912. No. 35062.

See also Cross-Arms, under CIVIL ENGINEERING, *Materials of Construction.*

Line Design

The Design, Construction and Operation of High Tension Electric Transmission Lines. Clyde D. Gray. Discusses the points that should be considered in designing, constructing, and operating aerial high tension lines. Short discussion. Ills. 1300 w. Pro Brooklyn Engrs' Club—Jan., 1912. No. 35487 N.

Economies of Power Transmission Lines. Alfred Still. Deals with the economies of an overhead power transmission line from a practical standpoint. 4500 w. Can Engr—Oct. 24, 1912. No. 37053.

The Solution of Network Problems by Determinants. Rollo Appleyard. Read before the Phys. Soc. Considers how mutual inductance can best be dealt with in forming the equations and the determinants, and suggests simplifications. 2200 w. Elect'n, Lond—Aug. 30, 1912. No. 35873 A.

The Determination of Tramway Networks. A. J. Lawson. Urges the value of using scale models of tramway systems in order to study the drop with various arrangements of feeders. 2000 w. Elect'n, Lond—July 12, 1912. No. 34705 A.

Treatise on the Calculation of Networks (Verfahren zur Berechnung elektrischer Leitungsnetze). H. Frohman. Mathematical discussion. Diagrams. 3000 w. Elektrotech u Masch—June 16, 1912. No. 34515 D.

Line Operation

Discussion on "Transmission Applied to Irrigation," and "Transmission Systems from the Operating Standpoint." Los Angeles, Cal., April 25, 1911. The papers by O. H. Ensign and James M. Gaylord, and by R. J. C. Wood are discussed. 7000 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28204 F.

Line Oscillations

Discussion on "Electric Line Oscillations." Chicago, June 29, 1911. The paper by G. Faccioli is discussed. 3000 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28203 F.

Line Sag

Discussion on "Solution to Problems in Sags and Spans," "Sag Calculations for Suspended Wires," and "Mechanical and Electrical Characteristics of Transmission Lines." Chicago, June 30, 1911. Papers by Wm. LeRoy Robertson, by Percy H. Thomas, and by Harold Pender and H. F. Thomson, are discussed. 8000 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28202 F.

Sags and Tensions of Overhead Conductors. Alfred Still. Gives a graphical Method for determining the mechanical constants of transmission lines. Also editorial. 4000 w. Elec Wld—Nov. 11, 1911. No. 27989.

Simplified Sag Formulas for Overhead Wires and Cables. H. V. Carpenter. Gives a logarithmic chart for showing the relation between the tension, sag and span-length in copper and aluminum transmission lines. 1200 w. Elec Wld—July 13, 1912. No. 34442.

Experimental Analysis of Sags in Long Spans. Brief report of investigation made of sags observed as compared with sags calculated. 1000 w. Elec Wld—Sept. 21, 1912. No. 36238.

Line Stresses

Mechanical Stresses in Transmission Lines. A. Guell. Discusses stresses due to dead weight, wind pressure, and temperature. 31 pages. Univ of Illinois, Bul 54—Jan. 22, 1912. No. 31299 N.

Line Supports

Flexible Supports for Overhead Transmission Lines. Alfred Still. Derives simple methods for calculating stresses in the remaining conductors when one of a group breaks. 3000 w. Elec Wld—July 13, 1912. No. 34441.

Line Testing

An Artificial Transmission Line and Some Disturbances Observed on It. Cassius M. Davis. Describes the construction of the line and the methods of determining the electrical constants of inductance, capacity and frequency, discussing phenomena observed. 2000 w. Gen Elec Rev—Oct., 1912. No. 36436 C.

Line Transients

Factors in Line Transients. G. Faccioli. Cites cases showing that switching should be confined to the low tension side in all cases where high tension switching is not absolutely necessary. 4000 w. Gen Elec Rev—June, 1912. No. 33375 C.

Load Regulation

Load Regulation by Means of Storage Batteries. J. H. Tracy. Discusses how a storage battery is made to regulate fluctuating loads and describes limiting devices for its control. Diagrams. 7500 w. Jour Ohio Soc of Mech, Elec & Steam Engrs—Vol IV., No. 1. Paper 172. No. 28334 F.

Losses

Discussion on "A Power Diagram Indicator for High Tension Circuits," Los Angeles, Cal., April 27, 1911. Harris J. Ryan's paper is discussed. 2500 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28205 F.

Poles

The Preservation of Telegraph Poles. Describes practice in England, using creosoted poles. Ills. 1200 w. Elec Rev, Lond—Dec. 22, 1911. No. 29449 A.

Preservation of Power Transmission Poles. W. R. Wheaton. An account of methods in California and results. 2000 w. Eng News—April 4, 1912. No. 31798.

Wood and Concrete Poles in Electrical Service. W. Manktelow. The present article is devoted mainly to a discussion of wooden poles. Ills. 2500 w. Elec Rev, Lond—Feb. 2, 1912. No. 30390 A.

Design and Construction of a Reinforced Concrete Telegraph Pole Line Across the Hackensack Meadows, New Jersey. A paper by George Gibbs, read before the Nat. Assn. of Cement Users. Illustrated description of a pole line for the Pennsylvania R. R., the poles to be of reinforced concrete to avoid rapid deterioration. 1500 w. Engng & Con—March 27, 1912. No. 31623.

Concrete Poles and Test Data on System of Oklahoma Gas and Electric Co. W. C. Bullen. Illustrates and describes the concrete poles used by this company and gives data concerning them. 1500 w. So Elect'n—Aug., 1912. No. 34980.

Reinforced Concrete and Concrete Poles for Overhead Electric Lines. Alfred Still. Discusses the advantages of concrete poles, their design and report of tests. 2000 w. Elec Wld—Sept. 28, 1912. No. 36415.

Practical Joint Pole Construction. J. E. Macdonald. Illustrates and describes the Los Angeles method, explaining the problems in connection with the work. 3000 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33236 F.

Discussion on "Practical Joint Pole Construction." Discussion of J. E. MacDonald's paper at Portland, Ore., April 18, 1912. 3500 w. Pro Am Inst of Elec Engrs—Oct., 1912. No. 37139 F.

See also Timber Preservation, under Civil Engineering, *Materials of Construction*, and Pole Lines, under *Communication.*

Protective Devices

Studies of Protection and Protective Apparatus for Electric Railways. E. E. F. Creighton, F. N. Shavor, and R. P. Clark. Describes the effects of high frequencies on car wiring, experience with aluminum arresters, devices applied to d. c. aluminum arrester, which diminishes deterioration with only slight decrease in protective value, etc. 10800 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33248 F.

Relay Protective Systems. L. L. Elden. A summary of American practice in the application of relay protection. Ills. 6000 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34861 F.

Protection of High Tension Power Circuits and Apparatus. James Lyman. Deals with the protection of heavy a. c. power feeders and power house apparatus. Ills. Also discussion. 11000 w. Jour W Soc of Engrs—March, 1912. No. 32128 D.

The Ground Connection in Lighting Protective Systems. E. E. F. Creighton. From an article in the *Gen. Elec. Rev.* Instructions for making connections, etc. 2500 w. Elec Rev & W Elect'n—Feb. 17, 1912. No. 30653.

Review of Recent Developments Related to Protective Apparatus. E. E. F. Creighton. Review of some of the more important devices recently developed for protecting electrical apparatus. 3500 w. Gen Elec Rev—June, 1912. No. 33379 C.

Earthing, Earth-Plates, and Leakage Detectors. Chris. Jones. Read before the Assn. of Min. Elec. Engrs. Describes protective apparatus, with special reference to coal mine conditions. Ills. 3500 w. Ir & Coal Trds Rev—Dec. 8, 1911. No. 28659 A.

Devices for Preventing Service Interruption (Le Sectionnement utilisé comme moyen préventif contre les arrets de service dans les usines d'électricité). Ed. Brandenburg. Description of various devices. Ills. 24 pages. Rev d' Électricité—Nov., 1911. No. 29802 N.

Means of Protecting High Tension Circuits Against Overloads and Atmospheric Discharges (Les Moyens de protéger les Lignes à haute tension contre les Surtensions et les Décharges atmosphériques). S. Capart. Describes and discusses four of the recently devised protective methods. Ills. 4800 w. Bull Soc Belge d'Électriciens—April, 1912. No. 34566 E.

The Cause of Over-Tension and a Review of Some Protective Devices (Ueber die Quellen der Ueberspannung und Kritik einiger Schutzvorrichtungen). F. Klost. Discusses atmospheric and other over-charges, and some preventative agencies. 2000 w. Elek u Masch—July 21, 1912. No. 35554 D.

Electric Installations Protected from Over-charges (La Protection des Réseaux et Installations Électriques contre les Surtensions). G. Capart. A discussion of the various causes of over-charges, lightening, etc., and description of some counteracting methods. Serial. 1st part. 4000 w. Tech Mod—Oct., 1911. No. 28420 E.

Protection of Low-Tension Lines Against High-Tension Lines (Protection des Lignes a Courant Faible contre la Haute Tension). M. Girousse. Presents troubles and means of prevention. Diagrams. 3100 w. Bull Soc Int Électriciens—June, 1912. No. 36184 F.

Substations

Outdoor Substations. C. M. Hackett. Considers the apparatus and its arrangement on the ground, and relative matters. 2200 w. Gen Elec Rev—Aug., 1912. No. 34950 C.

The Construction and Equipment of a Modern Substation for the Distribution of Electrical Energy. Alden W. Welch. Deals with the construction and equipment of a substation supplying two-phase current for lights and motors and continuous current for city arc lamps. 2500

w. Elec Rev & W Elect'n—Aug. 3, 1912. Serial. 1st part. No. 35056.

High Tension Substations. C. M. Rhoades. Presents comparative designs of outdoor, semi-outdoor, and indoor stations, with costs. Ills. 1000 w. Gen Elec Rev—Oct., 1912. N. 36432 C.

Sub-Station Working. A. T. Bullen. Discusses features of the control of the plant. 1800 w. Elec Rev, Lond—Sept. 6, 1912. No. 35985 A.

The Maintenance of Transformer Sub-Stations and Street Boxes. Remarks on the duties of inspectors and the protection needed to secure efficient service. 3500 w. Elec Rev, Lond—Aug. 30, 1912. No. 35870 A.

A Steel Car Substation with an Automatic Power-Input Control. C. L. Cadle. Illustrated description of a car having an automatic relay attachment to insure that the power taken by it will be constant. 1000 w. Elec Ry Jour—Sept. 7, 1912. No. 35832.

The Thirty-eighth Street Sub-Station of the Brooklyn Rapid Transit System. Illustrates and describes the interesting features. 3000 w. Elec Ry Jour—Dec. 16, 1911. No. 29021.

Substation of the Jamestown (N. Y.) Lighting and Power Company. Illustrates and describes changes in generating equipment. 1000 w. Elec Wld—Feb. 24, 1912. No. 30775.

Franklin Street Substation of the Metropolitan West Side Elevated Railway. Illustrated description of a 6000-kw fireproof substation, in Chicago, with restricted head room, tubular conductors on the A. C. side of the rotaries and novel transformer ventilating equipment. 1800 w. Elec Ry Jour—Sept. 28, 1912. No. 36406.

Systems

Discussion on "Transmission Systems of the Western Power Co.," "The Southern Power Co.," "The Great Falls Power Co.," and "The Southern Colorado Power Co." Chicago, June 29, 1911. Discusses papers by J. P. Jollyman, by W. S. Lee, by M. Hibgen, and by P. T. Hanscom. 3800 w. Pro Am Inst of Elec Engrs—Dec., 1911. No. 28926 F.

Three Phase

Power and Current in Three-Phase Circuits. Cecil P. Poole. Gives test curves and tables and an example illustrating their use. 1800 w. Power—Nov. 21, 1911. No. 28162.

The Charging Currents of Three-Phase Transmission Lines. George S. Humphrey. Analysis of the variations of charging currents when one conductor is connected to earth. 2000 w. Elec Wld—Nov. 25, 1911. No. 28313.

Inductive Reactance of Three-Phase Aerial Circuits. R. S. Brown. Gives a graphical representation of the reactance for unsymmetrically arranged conductors. 500 w. Elec Wld—March 23, 1912. No. 31507.

Notes on Three-Phase Power Measurement (Note sur les Mesures de Puissance en triphasé). Cammille Legrand. Mathematical determinations. Diagrams. 1800 w. Soc Belge des Elec—January, 1912. No. 31390 E.

Towers

Steel Towers for Overhead Transmission Lines. Alfred Still. Particulars and general information concerning steel towers for supporting conductors. Ills. 2500 w. Can Engr—Oct. 10, 1912. No. 36795.

Transformer Oils

The Formation of Deposit by Transformer Oils. P. N. Hooper. Report of investigations of the Newcastle Electric Supply Co., with comments on results reported by Mr. Symons, published in Dec. 22d and 29th issues. 3500 w. Elec Rev, Lond—Feb. 16, 1912. No. 30787 A.

The Formation of Deposit by Transformer Oil. Harold D. Symons. Reports a series of tests for the selection of a suitable oil for use with transformers from the point of view of the formation of deposit. 2000 w. Elec Rev, Lond—Dec. 22, 1911. Serial. 1st part. No. 29451 A.

Drying Out Oil Immersed Transformers. Describes method. 2200 w. Elec Engr, Lond—Nov. 3, 1911. No. 28013 A.

Transformers

Discussion on "The Application of Current Transformers to Three-Phase Circuit," "Cost of Transformer Losses." Chicago, June 30, 1911. Papers by J. R. Craighead, and by E. C. Stone and R. W. Atkinson are discussed. 3500 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28200 F.

The Transformation of Electric Energy. Abstract translation of a lecture by Leo Scholer. Illustrates and describes machines used. 1500 w. Ir & Coal Trds Rev—Feb. 2, 1912. No. 30414 A.

A. C. Transformer Design. G. W. Cansdell Hirst. Considers the main features of a well-designed transformer, develops formulae and explains the method of design. 1500 w. Aust Min Stand—Oct. 5, 1911. No. 28006 B.

Notes on the Design of Transformers. E. G. Reed. Discusses important features of transformer design. 1500 w. Elec Jour—Jan., 1912. No. 30015.

Modern High-Voltage Power Transformers in Practice; with Special Reference to a "T" Three-Unit System. William T. Taylor. Considers the operation of transformers, their construction, losses, cost, advantages, etc. 14000 w. Inst of Elec Engrs—Nov. 9, 1911. No. 28112 N.

The Characteristics of Series Instrument Transformers. Arthur P. Young. Determination of the effect of the magnetic-circuit characteristics on the current ratio and time-phase displacement. 2500 w. Elec Wld—Dec. 9, 1911. No. 28731.

Outdoor Transformers and Switching Stations. Stephen Q. Hayes. Deals with the subject under the headings of outdoor transformers, outdoor fuses, outdoor oil circuit-breakers, outdoor lightning arresters; actual outdoor installations; summary. Ills. 2500 w. Elec Rev & W Elect'n—Dec. 23, 1911. Serial. 1st part. No. 28906.

Heat Tests of Alternate-Current Transformers. J. T. Morris, J. W. Elliott, and D. Lewes. A report of experimental researches, and results, made to examine how nearly the heating of the various parts of a. c. transformers follows an exponential law. 1500 w. Elect'n, Lond—Jan. 26, 1912. No. 30299 A.

Instrument Transformers and Their Compensation. Harold A. Cooch. Considers transformers for meter service. 1200 w. Ap Sci—Feb., 1912. No. 30885 C.

The Construction of Constant Current Transformers. L. Arnold. Describes standard construction. Ills. 2200 w. Gen Elec Rev—March, 1912. No. 30768 C.

Starting Currents of Transformers with Special Reference to Transformers with Silicon Steel Cores. Trygve D. Yensen. Facts relating to the rush of current, due to the residual magnetism of the transformer iron, showing how to protect the system from injury due to this cause. Ills. 43 pages. Bul Univ of Ill, No. 55—Feb. 19, 1912. No. 32154 C.

Outdoor Type Transformers. C. S. Lawson. Illustrated descriptions of types and their installation. 1800 w. Elec Jour—April, 1912. No. 32181.

The Calculation of Three-Phase Power Transformers with Unsymmetric Wiring (Ueber die Berechnung von langen Drehstrom-kraftübertragungen mit unsymmetrisch angeordneten Leitungen). G. Markovitch. Mathematical discussion. 4400 w. Elektrotech u Maschinenbau—March 31, 1912. No. 32071 D.

Transformer Connections. Cecil P. Poole. Explains connections of single-phase transformers on two-phase and three-phase circuits. 1000 w. Power—May 14, 1912. No. 32862.

Transformer Connections. Cecil P. Poole. Explains method of testing for three-phase transformer connections. Diagrams. 1500 w. Power—June 18, 1912. No. 33760.

Transformer Connections for Three-Phase to Two-Phase Transformation. Louis F. Blume. Analysis of various schemes in use for transforming electrical energy from three-phase to two-phase windings. 2500 w. Gen Elec Rev—Sept., 1912. No. 35672 C.

General Trend of Development in Transmission and Distribution of Electric Power as Shown by Recent Transformer Production. W. S. Moody. Based on figures of the transformer business w. Gen Elec Rev — June, 1912. No. 33372 C.

Care and Operation of Transformers. W. M. McConahey. From a paper before the Nat. Elec. Lgt. Assn. Directions for the shipping and testing of transformers and the necessary care. 1600 w. Power—July 16, 1912. No. 34454.

Some Interesting Points Concerning Transformer Operation. James A. Seager. Notes on operating experience. 2000 w. So Elect'n—July, 1912. No. 34493.

Determination of Polarity of Transformers for Parallel Operation. W. M. McConahey. Considers various combinations. Diagrams. 2500 w. Elec Jour—July, 1912. No. 34840.

Notes on Instrument Transformers. Cecil Toone. Describes methods of transformer testing. 1200 w. Elec Rev, Lond—Aug. 30, 1912. No. 35872 A.

Automatic Step-Up and Step-Down Transformers (Survolteurs-Dévolteurs automatiques). L. Schröder. Describes the action of the Pirani transformer for equalizing batteries. Diagrams. 8000 w. Rev d'Électricité—May, 1912. No. 36181 D

The Use of Reactance in Transformers. W. S. Moody. Discusses in a general way how reactance can be introduced into transformers, and some of the difficulties and limitations. Ills. 2500 w. Pro Am Inst of Elec Engrs—Oct., 1912. No. 37133 F.

High-Frequency Discharges in High-Tension Transformers. A. J. Makower. Report of experiments to gain information concerning these high-frequency oscillations. 1200 w. Elec Rev, Lond—Sept. 27, 1912. No. 36717 A.

Grouping of Current Transformers. Harold W. Brown. Considers reversed V- and Y-connections. 2000 w. Elec Jour—Nov., 1911. No. 28323.

The Problem of the Transformation of Frequency (Le Problème de la Transformation de la Fréquence). Paul Bunet. A brief statement of the various forms of the problem. 2000 w. L'Électricien. Oct. 7, 1911. No. 28411 D.

A Study of the Current Transformer with Particular Reference to Iron Loss. P. G. Agnew. 9000 w. Bul Bureau of Stand—Oct., 1911. No. 29097 N.

A Bell-ringing Transformer. Frederick E. Ward. Brief illustrated description of a transformer that will ring door-bells and may be applied to various uses. 700 w. Sci Am—April 27, 1912. No. 32334.

Potential Transformer Testing. J. R. Craighead. Note on the effect of the resistance of the detector circuit, in determining the ratio of two alternating voltages, and the phase angle between them, by the balance method. 1200 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34087 F.

The Testing of Instrument Transformers. P. G. Agnew and F. B. Silsbee. Explains a modification of the potentiometer method recently developed at the Bureau of Standards. 700 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34093 F.

Measurement of Energy with Instrument Transformers. Alexander Maxwell. Considers aspects of the problem presented by the use of instrument transformers in connection with watt-hour meters. 1500 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34084 F.

Replacing Old Transformer Cores with New Ones. John G. Homan. Gives results of an investigation of the possible economy resulting from the change. 1000 w. Elec Wld—Sept. 7, 1912. No. 35850.

Wires

Wires for Direct-Current Circuits. Cecil P. Poole. Tables for determining the proper size of wire, with explanation. 3500 w. Power—April 2, 1912. No. 31711.

The Properties of Electrical Wires (Mitteilungen über die Eigenschaften von Fahrleitungen). Sigm. Guggenheim. Results of tension, torsion, concussion and other tests on various grades of wires. 4000 w. Elek Kraft u Bahnen—June 24, 1912. No. 34526 D.

See also Wire Tests, under *Measurement.*

MISCELLANY

Accidents

Electrical Accidents. Emmett Campbell Hall. Concise directions for prevention and first aid. 1500 w. Engineering Magazine—Sept., 1912. No. 35451 B.

The Prevention of Electrical Accidents. H. M. Gassman. Abstract of presidential address before the Birmingham (Ala.) Assn. of Elec. Engrs. Discusses causes of accidents, and gives rules for electrical workers. 2000 w. Mech Engr—July 26, 1912. No. 35156 A.

See also Protective Devices, under *Transmission.*

Australia

Electricity in Australia. O. W. Brain. Presidential address to Elec. Assn. of N. S. W. Showing progress during 21 years. 2500 w. Aust Min Stand—May 9, 1912. Serial. 1st part. No. 33797 B.

Copper

Copper Buying and Drawing. The Economy of the Draw-Bench. C. V. Rapier. Discusses whether it pays to put in a draw-bench for drawing copper from rough rolled bar into rounds, flats, commutator bars, etc. 1500 w. Elec Rev, Lond—May 31, 1912. No. 33658 A.

Electrical Economics

Electricity as a Factor in Civilization. Dr. J. Siegel. Abstract of a lecture before the Soc. of Elect'ns, Berlin. Discusses its influence in industry, commerce, and in the home. Ills. 2000 w. Sci Am Sup—July 27, 1912. No. 34780.

See also same heading, under INDUSTRIAL ECONOMY.

Electrical Engineering

The Relation of Electrical Engineering to Other Professions. Gano Dunn. President's address. An interesting review of the broad domain covered by engineering and the limitations. 3500 w. Pro Am Inst of Elec Engrs—Aug., 1912. No. 35374 F.

Industry

Recent Developments in the Electrical Art. Elihu Thomson. Address on receiving the Elliott Cresson medal. Reviews the technical progress in various applications. 2500 w. Jour Fr Inst—Aug., 1912. No. 35365 D.

The Power Phase of Industrial Engineering. A. F. Strouse. Deals with power in reference to utilization in manufacturing and in connection with new developments. 3000 w. Elec Jour—March, 1912. No. 31599.

A Review of the year in the Electrical Industry. A review of progress during 1911 in telephony and telegraphy, wireless telegraphy and telephony, electric lighting, electric railways, etc. 9500 w. Elec Rev & W Elect'n—Jan. 6, 1912. No. 29492.

Electrical Development in Industrial Areas. L. Crouch. Considers the general electrical development in various towns and districts mainly devoted to manufactures or industries. 1800 w. Elec Rev, Lond—Jan. 12, 1912. Serial. 1st part. No. 29893 A.

Notes on Electrical Progress of 1911 and Present Tendencies. Henry H. Norris. Brief remarks on conspicuous tendencies and accomplishments during the past year. 1800 w. So Elect'n—Jan., 1912. No. 29635.

The Year's Electrical Developments in Continental Europe. C. L. Durand. Reviews progress. 1700 w. Elec Rev & W Elect'n—Jan. 6, 1912. No. 29494.

Electrical Progress in Great Britain During 1911. Albert H. Bridge. Reviews improvements in various departments of electrical application throughout England. 2200 w. Elec Rev & W Elect'n—Jan. 6, 1912. No. 29493.

Southern Development and the Agencies Shaping Electrical Future of the South. D. H. Braymer. Brief review of early and recent electrical transmission plants in the south. 2200 w. So Elect'n—Jan., 1912. No. 29639.

Insulating Materials

The Use of Mica in the Insulation of Electrical Apparatus. A. P. M. Fleming and R. Johnson. Aims to correct some erroneous impressions in connection with the practical use of mica, and to give general information. 2500 w. Elec Rev, Lond—Sept. 20, 1912. Serial. 1st part. No. 36481 A.

Joseph Henry

The Debt We Owe to Henry as a Scientist. Michael I. Pupin. Address delivered at the presentation of a bust of Joseph Henry to the Associazione Electrotecnica Italiana. 2500 w. Pro Am Inst of Elec Engrs—Sept., 1912. No. 36312 F.

Legislation

Company and Consumer. Discusses points which are continually arising and the principles governing them in Englan. 3500 w. Elec Rev, Lond—Aug. 30, 1912. Serial. 1st part. No. 35869 A.

Electrical Law in the British Dominion. A summary of the law relating to electric light and power in the more important British colonies. 800 w. Elec Rev, Lond—Feb. 16, 1912. Serial. 1st part. No. 31014 A.

The Legal Regulation of the Production and Distribution of Electric Power in Austria (Die Gesetzlichen Bestimmungen für die Erzeugung und Verteilung von Elektrischer Energie in Oesterreich). Heinrich Schreiber. Views upon the rights of the government to enforce such regulation. Serial. 1st Part. 1800 w. Elektrotechniker—Feb. 10, 1912. No. 31376 D.

Mathematics

The Place of Mathematics in Engineering Practice. Sir William H. White. Lecture delivered at the Mathematical Congress, Cambridge. Explains the character of the change that has taken place in the use of mathematics in connection with engineering practice. 5000 w. Engr, Lond—Sept. 27, 1912. Serial. 1st part. No. 36739 A.

Property Appraisals

See Electrical Economics, under INDUSTRIAL ECONOMY.

Scientific Apparatus

The Physical Society's Exhibition of Scientific Apparatus. Report of two discourses and illustrated description of interesting exhibits. 3000 w. Engng—Dec. 22, 1911. Serial. 1st part. No. 29471 A.

Specifications

Specifications. F. S. Sells. Abstract of paper before the Manchester Sec. of the Inst. of Elec. Engrs. Discusses what the author considers are undesirable features of the usual specification. 3500 w. Elect'n, Lond—Feb. 23, 1912. No. 31018 A.

Tests

Fraudulent Tests. An exposure of some of the forms of fraud in obtaining official certificates. 2500 w. Elec Rev, Lond—April 5, 1912. Serial. 1st part. No. 31906 A.

Turin Congress

The International Electrotechnical Congress of Turin. Report to the Board of Directors of the A. I. E. E. from its Delegation to the Turin Congress. 4000 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28213 F.

Turin Meeting of the International Electrotechnical Commission, September 7-13, 1911. A provisional report from the U. S. Nat. Committee. 4000 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28212 F.

International Exposition of Industry and Labor, Turin, 1911 (Esposizione Internazionale delle Industrie e del Lavore, Torino 1911). Elvio Soleri. The first of the series treats of the electrical machinery on exhibition from various European countries. Ills. Serial. 1st part. 3700 w. Industria—Jan. 7, 1912. No. 30635 D.

INDUSTRIAL ECONOMY

Accident Prevention

The Prevention of Industrial Accidents. J. Tod. Reviews the work of the American Museum of Safety. Ills. 2500 w. Yale Sci M—Nov., 1911. No. 28238 C.

The Trade Union and Its Relation to Accident Prevention (Die Entwicklung der Berufgenossenshaften und die Richtlinien der modernen Unfallverhütung). Schlesinger. Discusses some of the modern preventatives as induced by the unions. Ills. Serial. Part I. 4500 w. Zeit des Ver Deutscher Ing—Oct. 28, 1911. No. 28444 D.

Damage Claims by Fraternal Organizations against Employers on Account of Accidents (Schadenersatzanspruch der von Betriebsunfällen betroffenen Bruderlademitglieder gegen den Betriebsunternehmer). K. Flieder. Interpretation of the laws covering employer's liability as applied to a refund of money paid out by fraternal organizations. Serial. 1st part. 2800 w. Oest Zeit f Berg u Hüttenwesen—April 20, 1912. No. 32702 D.

See also Labor, under Industrial Economy; and Accident Prevention, and Safety Devices, under Mechanical Engineering, *Machine Works and Foundries.*

Accounting

Increased Efficiency in Scientific Office Accounting. P. R. Jones. Read before the Nat. Com. Gas Assn. Discusses the efficiency of office employees, and economy and accuracy in methods. 2500 w. Am Gas Lgt Jour—Jan. 1, 1912. No. 29726.

Bookkeeping for Contract Work. Louis Levy. Read before the Elec. Cont. Assn. of San Francisco. Outlines the system and methods used. 1500 w. Elec Rev & W Elect'n—April 27, 1912. No. 32401.

Accounting System for the Small Electrical Contractor. Roy W. Eves. Explains system. 2000 w. Elec Rev & W Elect'n—April 20, 1912. No. 32237.

Standardizing Factory Expense and Cost. Sterling H. Bunnell. Explains the value of standardized accounts. 2000 w. Ir Age—Nov. 16, 1911. No. 28052.

Reforming City Business Methods. U. L. Leonhauser. Explains the views and methods of a bureau organized to improve methods of municipal accounting and reporting. 2000 w. Munic Jour—June 6, 1912. No. 33486.

Cost Accounting in Lynn. Harry T. Rich. An explanation of the system in use in the Department of Streets and Highways. 2500 w. Munic Jour—June 6, 1912. No. 33484.

Railway Accounting, Mental and Mechanical. J. S. Donaldson. Abstract of paper read before the Assn. of Am. Ry. Acc. Officers, at Quebec. A discussion of methods used, with suggestions and descriptions of devices used 2500 w. Ry Age Gaz—Aug. 30, 1912. Serial. 1st part. No. 35640.

See also City Planning, under Civil Engineering, *Municipal.*

Agriculture

The Increase of Agricultural Efficiency. Oskar Nagel. Considers briefly artificial stimulus and nourishment for plants. 1500 w. Cassier's Mag—Feb., 1912. No. 30285 B.

See also same heading, under Electrical Engineering, *Power Applications.*

Applied Science

Manager and Scientist. H. F. Stimpson. Discusses the relation of applied science to business. 3500 w. Cassier's Mag—April, 1912. No. 31833 B.

Appraisals

The Appraisal of Public Service Properties as a Basis for the Regulation of Rates. C. E. Grunsky. An analysis of the problem, explaining the principles which should prevail when an appraisal is made for rate-regulation purposes. 22000 w. Pro Am Soc of Civ Engrs—April, 1912. No. 32381 F.

The Appraisal of Public Service Properties as a Basis for the Regulation of Rates. Discussion of the paper of C. E. Grunsky. 12000 w. Pro Am Soc of Civ Engrs—Aug., 1912. No. 35630 F.

See also Electrical Economics, under Industrial Economy.

Apprenticeship

Modern Apprenticeship. A. D. Williams. Critical discussion of systems. 1800 w. Sib Jour of Engng—Jan., 1912. No. 30825 C.

Machinist Trade Apprenticeships. Charles H. Winslow. A discussion of developments of industrial education, outlining a three-year machinist apprenticeship course and schedule of equipment necessary. 6500 w. Am Mach—Jan. 25, 1912. No. 30113.

Features of Apprenticeship System at the G. E. Co.'s Lynn Works. Chester L.

Lucas. Illustrated description of the new quarters, with an outline of some of the work. 3000 w. Mach, N Y—April, 1912. No. 31674 C.

Apprenticeship in Switzerland. T. Biefer. An account of methods adopted by the Swiss Confederation and the Various cantons to stimulate an interest in industrial pursuits. 2500 w. Am Mach—Sept. 26, 1912. No. 36219.

Suggestions for Training Foundry Apprentices. J. W. Horne. Read before the British Found. Assn. General discussion of industrial education and explanation of two apprenticeship systems. 2500 w. Foundry—Sept., 1912. No. 35702.

Arbitration

Arbitration. Onward Bates. A discussion of this method of settling disputes, and the methods of conduct that should govern, urging that engineers establish a code. General discussion follows. 31500 w. Jour W Soc of Engrs—June, 1912. No. 34615 D.

Associations

Employers Alliances (Arbeitgeberverbände). Paul Steller. Outlines the causes for the formation of such protective alliances, and states some of their effects. 4800 w. Zeit f Werkzeng—March 25, 1912. No. 32058 D.

Automobile Accounting

See Accounting, under MECHANICAL ENGINEERING, *Automobiles.*

Brazil

Brazil: Its Present Conditions and the Possibilities for Future Commercial Relations with Great Britain. C. E. Best and H. L. Parrott. First of a series of articles on the rapid development and industrial progress to be expected in the next 20 years. 2500 w. Elec Rev, Lond—Nov. 10, 1911. Serial. 1st part. No. 28113 A.

British Association

The British Association: Its Present, Past, and Future. Discusses the declining interest and attendance of the British Association for the Advancement of Science, the causes, the work, and necessary reforms. 3000 w. Engr, Lond—Aug. 16, 1912. No. 35479 A.

Bureau of Standards

Metrology in Relation to Industrial Progress. Samuel W. Stratton. Reviews the history of the fundamental standards, and describes work of the U. S. Bureau of Standards. 3500 w. Jour Fr Inst—Oct., 1912. No. 37106 D.

Business Administration

Military History and the Science of Business Administration. Edw. D. Jones. First of a series of three articles aiming to discover a general science of administration based on a study of military history and other forms of organized effort. 3000 w. Engineering Magazine—Oct., 1912. No. 36285 B.

Military History and the Science of Business Administration. Edw. D. Jones. This second article of a series gives results of an examination of military history and the tactics of the conquerors. 3000 w. Engineering Magazine—Nov., 1912. No. 37110 B.

Is Big Business an Industrial Evil. Fairfax Harrison. Address before the Nat. Assn. of Freight Traffic Officers. Critical discussion of the situation in the United States, and its regulation. 2500 w. Ry Age Gaz—Nov. 24, 1911. No. 28265.

The Place of the Great Business Combinations in Modern Industrial Life. Hon. Frederick P. Fish. Abridged address. Explains their advantages and the conditions which have made them necessary. 6000 w. Jour Worcester Poly Inst—July, 1912. No. 34830 C.

Chemistry

The Earning Power of Chemistry. Arthur D. Little. Lecture under the auspices of the Indiana Sec. of the Am. Chem. Soc. Explains the many benefits for which the world is indebted to this science. Its industrial value is shown. 4500 w. Sci Am Sup—Jan. 27, 1912. No. 30062.

The Progress in Chemical Industry of the South. David T. Day. Considers past and future development. 3500 w. Mfrs' Rec—Feb. 22, 1912. (Special.) No. 30743 D.

Commerce

The Opportunities of the United States in South American Commerce. Francis Washburn Hoadley. An illustrated article calling attention to the opportunities for extension of trade and giving information related. 3000 w. Cassier's Mag—April, 1912. No. 31837 B.

Commerce, the Commission and the Courts. Logan G. M'Pherson. A lecture at Cornell Univ. Discusses the conflict between the Commission and Courts. 4000 w. Ry Age Gaz—June 21, 1912. No. 33872.

Conservation

Our National Resources and Our Federal Government. R. W. Raymond. Critical discussion of the proposal to lease, by the United States, certain natural resources on the public domain. 4500 w. Bul Am Inst of Min Engrs—Oct., 1912. No. 37128 F.

Cost Estimates

Cost of Carrying Out Work. A. Fairlie Bruce. Gives tables which embody the results of notes on a great variety of works. 1000 w. Engr, Lond—Nov. 3, 1911. No. 28045 A.

Maintenance Cost Data Competition. Gives a number of papers submitted by different authors. 5000 w. Ry Age Gaz —Nov. 17, 1911. No. 28079.

Collecting Data to Compute Costs. Guido Sacerdote. Explains the forms, index and methods used in an Italian machine shop. 4000 w. Am Mach—Nov. 9, 1911. No. 27772.

Cost-Keeping

Keeping Mining Costs at Joplin. Otto Ruhl. Gives cost records of representative mines showing systems and methods in use. 3500 w. Eng & Min Jour—Dec. 9, 1911. No. 28699.

See also same heading, under CIVIL ENGINEERING, *Construction*.

Cost Methods

Cost Methods that Give the Executive Control of His Business. Benjamin A. Franklin. Discusses the essentials of the cost problem and the philosophy of costs. 5500 w. Engineering Magazine—Jan., 1912. No. 29209 B.

Cost Methods that Give the Executive Control of His Business. Benjamin A. Franklin. This second article discusses the place of the trial balance in the cost system. 2500 w. Engineering Magazine —Feb., 1912. No. 30027 B.

Cost Methods that Give the Executive Control of His Business. Benjamin A. Franklin. This third article discusses the cost of the salable article. 3000 w. Engineering Magazine—March, 1912. No. 30834 B.

Cost Methods That Give the Executive Control of His Business. Benjamin A. Franklin. This fourth article of a series discusses the economical consideration of material by costs. 3500 w. Engineering Magazine—April, 1912. No. 31551 B.

Cost Methods that Give the Executive Control of His Business. Benjamin A. Franklin. This fifth article of a series discusses labor as the essential element of cost from the cost viewpoint. 2500 w. Engineering Magazine—May, 1912. No. 32341 B.

Cost Methods That Give the Executive Control of His Business. Benjamin A. Franklin. This sixth article of a series on the control of expense. 5000 w. Engineering Magazine—June, 1912. No. 33133 B.

Cost Methods That Give the Executive Control of His Business. Benjamin A. Franklin. On the value of statistics and their study. Seventh of a series of articles. 2500 w. Engineering Magazine—July, 1912. No. 33967 B.

Cost Methods That Give the Executive Control of His Business. Benjamin A. Franklin. Eighth and concluding article of a series aiming to show how cost accounts may help the manager. 3500 w. Engineering Magazine—Aug, 1912. No. 34755 B.

The Fallacy of Including Interest and Rent as Part of Manufacturing Cost. A. Lowes Dickinson. Gives the arguments against this practice and considers alternative methods. 2000 w. Jour of Acc—Dec., 1911. No. 30011 C.

Common Sense Cost-Keeping for Engineers. Severin Nelson. A discussion of the value of such systems, the objects, general principles, etc. 2,000 w. Mech Wld—Feb. 23, 1912. Serial. 1st part. No. 31029 A.

A Treatise on Cost Finding. Frank E. Werner. Discussion of cost accounting. 3500 w. Ind Engng—May, 1912. No. 33034 C.

A Method of Contract Payments Based on Cost. George I. Battelle. Gives a method that is definitely based on the cost of doing the work. 2000 w. Eng News —Aug. 29, 1912. No. 35645.

What Should a Cost System Accomplish? S. E. Nold. Describes its essential features when applied to foundry work. 3000 w. Foundry—April, 1912. No. 31692.

A Simple Cost-Keeping System. E. W. Bernhard. Explains system adaptable to small sized shops. 2000 w. Am Mach —April 4, 1912. No. 31756.

Mining Cost-Chart. Carson W. Smith. A graphical determination of present and future profits and showing the influence of tonnage on costs. 1500 w. Mines & Min—April, 1912. No. 31738 C.

Essential Features of a Foundry Cost System. S. E. Nold. Suggestions for arranging a system to meet individual requirements. 2500 w. Ir Trd Rev—May 16, 1912. No. 32902.

A Municipal Cost System. D. Carl Eggleston. Shows how the principles of cost accounting are applied to teaming, stone crushing, road making and repair work in a large city. 2000 w. Jour of Acc—Dec., 1911. No. 30010 C.

See also Depreciation, under INDUSTRIAL ECONOMY.

Costs

Expense Burden: Its Incidence and Distribution. Sterling H. Bunnell. The method of procedure is illustrated in connection with a small machine shop. 4000 w. Jour Am Soc of Mech Engrs—Dec., 1911. No. 28734 C.

Cost and Its Significance. H. J. Davenport. Discusses demand and supply, and cost of production, with other factors to be considered in cost analysis. 11000 w. Bul Am Ec Assn—Dec., 1911. No. 29089 F.

Cost Data of Power-Plant Installation and Operation. W. H. Weston. Gives figures derived from experience in good average practice. 3800 w. Engineering Magazine—Jan., 1912. No. 29208 B.

Depreciation

Methods of Determining Life of Public Utilities. Halford Erickson. From a paper on Depreciation, read before the Cent. States W. Wks. Assn. A study of depreciation as an operating expense. 4000 w. Engng & Con—Oct. 23, 1912. Serial. 1st part. No. 36956.

Fixed Charges in the Machine Shop and the Depreciation of Machine Tools. Henry Spencer. Deals with the working charges of the machine shop in general, and specifically with the depreciation of the machine tools. 3000 w. Engr, Lond—Sept. 27, 1912. Serial. 1st part. No. 36735 A.

Developments

Looking Forward. Editorial notes on impending developments. 9000 w. Cassier's Mag—July, 1912. Serial. 1st part. No. 34914 B.

Economics

Is the Study of Economics Useful for the Engineer? Dr. Ernest R. Spedden. Discusses the importance of the economic relation of the engineer to industry and the need of training in the fundamentals of economics. 1500 w. Sib Jour of Engng—April, 1912. No. 32407 C.

Regulation of Industries by Governmental Supervision. J. H. G. Wolf. A study of the influence of government upon economics, especially the changes of the last decade. 3500 w. Jour Assn of Engng Socs—May, 1912. No. 33815 C.

Education

The Efficiency Principles of Technical Education. Julian C. Smallwood. Urging an efficiency basis for evaluating the work. 3500 w. Engineering Magazine—March, 1912. No. 30833 B.

Engineering Education in Its Relation to Training for Engineering Work. Ernest McCullough. Suggestions for changes that the writer believes would be beneficial, outlining the course recommended. 5000 w. Pro Am Soc of Civ Engrs—May, 1912. No. 33218 F.

Engineering Education in Its Relation to Training for Engineering Work. Discussion of the paper by Ernest McCullough. 4500 w. Pro Am Soc of Civ Engrs—Sept., 1912. No. 37096 F.

Engineering Education in Its Relation to Training for Engineering Work. Continued discussion of paper by Ernest McCullough. 18500 w. Pro Am Soc of Civ Engrs—Oct., 1912. No. 37151 F.

The Educational Bureau in Industrial Establishments. W. H. Radcliffe. Considers its practical value as an adjunct to a large manufacturing or operating company. 1500 w. Engineering Magazine—Dec., 1911. No. 28393 B.

Education in Science as a Preparation for Industrial Work. H. A. Roberts. Discusses matters of importance to educational experts. General discussion follows. 13500 w. Jour Soc of Arts—March 1, 1912. No. 31160 A.

Fundamentals in Technical Education. Regis Chauvenet. Discusses the modern tendency toward multiplicity of studies. 6000 w. Mines & Min—April, 1912. No. 31743 C.

Industrial Education. Preliminary report of the educational committee. Ills. 10800 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34867 F.

The Idol of Quick Returns. David H. Browne. Address at dinner of Sch. of Mines, Queen's Univ. Criticism of views of R. T. Crane in a pamphlet entitled "The Futility of Technical Schools, etc." 3000 w. Can Engr—Jan. 4, 1912. No. 29490.

The Idol of Quick Returns. David H. Browne. Extracts from an address at Kingston, Ont., on the real objects of university education. 2500 w. Met & Chem Engng—July, 1912. No. 34170 C.

Problems in Engineering Education. E. H. Fish. A critical discussion of the training needed. 2500 w. Am Mach—Oct. 31, 1912. No. 37090.

The Training of Engineers. Charles Day. Presidential address before the Manchester Assn. of Engrs. Outlines conditions under which apprentices might be employed, and discusses the training needed. 2200 w. Mech Engr—Oct. 18, 1912. No. 37070 A.

Industrial Engineering from the Character Side. W. J. Kaup. An address on the need of the development of the individual. 3500 w. Sib Jour of Engng—Oct., 1912. No. 37032 C.

"Men Wanted." Charles Whiting Baker. Address at Commencement of Rose Polytechnic Inst., Terra Haute, Ind. Mainly discusses the relation of engineers to the public. 5000 w. Eng News—June 20, 1912. No. 33861.

Education and Economy. A critical discussion of engineering educational methods in England. 1800 w. Engr, Lond—June 28, 1912. No. 34335 A.

Higher Education: Some Views of a Teacher Employer. William Cramp. Abstract of address to the Manchester Local Sec. of the I. E. E. Discusses the need of a broader education and how to bring it about. 3000 w. Elect'n, Lond—Nov. 3, 1911. No. 28019 A.

Industrial Education. Dexter S. Kimball. Reprint, with some changes, of three articles published in the *American Machinist*. Considers the need of industrial education, the fundamental principles, and the work in the public schools. Cornell Univ—Study No. 1. No. 29063 N.

Technical High Schools and Engineers (Technische Hochschulen und Ingenieure). Anton Dachler. Suggests specializing in the work of the high-school. 3000 w. Zeit d Oest Ing u Arch Ver—Nov. 17, 1911. No. 28828 D.

Shall I Give My Boy a Technical Education? John Ritchie, Jr. First of a series of articles discussing the advantages and requirements of various technical professions. 1500 w. Sci Am—March 2, 1912. Serial. 1st part. No. 30916.

Efficiency in Education. Dr. George A. Hoadley. Discusses the fundamentals of efficient education. 1600 w. Jour Fr Inst—Aug., 1912. No. 35366 D.

Industrial Education by the State. Illustrated description of the methods of instruction and the equipment used by the state of Connecticut at its Trade School at New Britain. 2000 w. Met Work—Aug. 30, 1912. No. 35633.

The .Status of Co-operative Schools Charles H. Winslow. Favors the co-operative plan and gives descriptive analysis of the work at various schools. 4500 w. Am Mach—June 20, 1912. No. 33802.

The Status of Co-operative Schools. E. H. Fish. A discussion of the article of Charles H. Winslow. 4000 w. Am Mach—Aug. 8, 1912. No. 35092.

Rise of German Factory Schools. Kurt Kohlmann. Explanation of developments which have caused a remarkable decrease in emigration. 2000 w. Am Mach—June 27, 1912. No. 33956.

The Question of Developing Mechanical Engineers in the Technical High Schools (Zur Frage der Ausbildung der Maschineningenieure an den Technischen Hochschulen). Prof. Schilling. Discusses the advisability of this procedure. 5500 w. Zeitschr des Ver deutscher Ing—Mar. 16, 1912. No. 32042 D.

Questions on Technical Education (Technische Erziehungsfragen). Conrad Matschoff. Outlines some of the principal points to be covered in a complete engineering education. 5200 w. Zeit f Werkzeug—Mar. 15, 1912. No. 32057 D.

The Growth of Technical Public Instruction in Germany (Die Entwicklung des technischen Unterrichtswesens in Deutschland). Conrad Matschoss. History of such growth since its inception in Freiberg in 1765. 4900 w. Stahl u Eisen—Feb. 8, 1912. No. 31317 D.

Remarks on the Proper Training of the Engineer, and on the Question of Further Extension in Technical High Schools (Bemerkungen zur wissenschaftlichen Ausbildung der Ingenieure und zur Frage des weiteren Ausbaues der Technischen Hochschulen). C. Bach. Recommendations for further improvements. 7000 w. Zeitschr des Ver Deutscher Ing—Feb. 24, 1912. No. 31362 D.

The Future and Scope of the Technical Mechanic (Zukunft und Ziele der technischen Mechanik). Ferdinand Wittenbauer. Rectorial address before the Graz Technical High School. 4800 w. Zeitschr des Ver deutscher Ing—June 29, 1912. No. 34558 D.

Recent Efforts for Improving the Mathematical Instruction in German High Schools (Die neueren Bestrebungen zur Verbesserung des mathematischen Unterrichtes an den höheren Schulen Deutschlands). Herr Treutlein. Outlines the system suggested. 8600 w. Zeitschr des Ver deutscher Ing—July 27, 1912. No. 35543 D.

The Berlin Technical High School at Charlottenburg. H. S. Rowell. An illustrated description of the buildings and the work. 3500 w. Engng—March 8, 1912. Serial. 1st part. No. 31258 A.

The Training of Mine Officials. George Knox. From a paper read before the Wigan and Dist. Inst. of Min. Students. Discusses the aims of the technical mining school, and the required training for colliery officials. 2500 w. Col Guard—Jan. 19, 1912. No. 30171 A.

A New Departure in Mining Education. H. G. Carmichael. An account of the mining department in connection with the new high school in Sudbury, and the work. 1000 w. Qr Bul Can Min Inst, No. 18—February, 1912. No. 31438 N.

The Imperial College of Science and Technology. C. A. M. Smith. An explanation of the present state of affairs at this institution. Ills. 2500 w. Engng —May 24, 1912. Serial. 1st part. No. 33459 A.

Tangshan Engineering College. Illustrated description of the buildings, with explanation of the college aims and work. 3500 w. Far East Rev—Sept., 1911. No. 28002 N.

Engineering Education in China. F. A. Foster. On recent progress. 2000 w. Am Mach—Dec. 14, 1911. No. 28951.

Discussion on "Tentative Scheme of Organization and Administration of a State University." Chicago, June 30, 1911. The paper by Ralph D. Mershon is discussed. 7000 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28206 F.

Advanced Courses in Electrical Engineering. Ernst J. Berg. Abstract of a series of lectures, illustrated by problems, given at the University of Illinois. 2500 w. Gen Elec Rev—March, 1912. Serial. 1st part. No. 30765 C.

A Swiss Works Continuation School. Describes the Sulzer Bros.' school for training apprentices, outlining the courses of study and other details. 3000 w. Am Mach—Feb. 22, 1912. No. 30688.

Technical Education on the Rand. Brief outline of the general position of higher education in South Africa, with illustrated description of the School of Mines and Technology. 2800 w. Engr, Lond—May 17, 1912. No. 33276 A.

The Surface Workers on the Rand and Their Technical Education. F. J. Pooler. Discusses the needs and schemes for technical training. Also discussion. 7500 w. Jour Chem, Met & Min Soc of S Africa —June, 1912. No. 35282 E.

Technical Education in South Australia. Prof. R. W. Chapman. Address before the Cong. of Pub. Sch. Teachers in Adelaide. 6500 w. Aust Min Stand—Aug. 15 and 22, 1912. Serial. 2d part. No. 35981 each B.

The Education of the Foundry Apprentice. J. W. Horne. Read before the British Found. Assn. General remarks, with a short account of the Ludwig, Loewe & Co. apprentice system, in Berlin. 2200 w Mech Engr—Aug. 9, 1912. No. 35294 A

The Education of Apprentices in the Foundry. A résumé of a dissertation by Dr. Otto Brandt, presented at joint meeting at Koblenz, Germany. 1800 w. Am Found Assn—Sept. 24, 1912. No. 37145 N.

An Experimental Iron and Steel Laboratory. James H. Knapp. Illustrates and describes the heat-treating and electric furnaces of the metallurgical laboratory of the Carnegie Institute of Technology, Pittsburgh. 1500 w. Ir Age—Oct. 17, 1912. No. 36869 C.

A Great Trade School at St. Louis. F. H. Littlefield. An account of the David Rankin, Jr., school of mechanical trades. 2500 w. Ir Age—Dec. 7, 1911. No. 28678.

The Belfast Municipal Technical Institute. W. J. Crawford. Illustrated detailed description of the new mechanical engineering laboratory. Plate. 7500 w. Engng —Dec. 8, 1911. No. 29057 A.

Training Mechanics and Engineers. C. E. Downton. Describes the system of the Westinghouse Co. Ills. 3000 w. Am Mach—Jan. 18, 1912. No. 29646.

The Cincinnati Method of Industrial Education—A Friendly Criticism. James A. Pratt. Discusses points favorable and unfavorable to this plan. 2500 w. Mach, N Y—March, 1912. No. 30923 C.

Shopwork for Engineering Students. Winslow H. Herschel. Considers college shops, their defects, and proposed substitutes. 5000 w. Eng News—July 18, 1912. No. 34647.

The Wentworth Institute. Charles L. Hubbard. Illustrates and describes methods of a trade school for training shop foremen and workmen. 2500 w. Mach, N Y—July, 1912. No. 34162 C.

Industrial Education in New England. E. F. Fish. A review of the progress of publicly supported industrial schools. 8500 w. Am Mach—May 23, 1912. No. 33010.

Technical Education in Ireland. George Fletcher. An account of the work, with general discussion. 8500 w. Jour Soc of Arts—April 26, 1912. No. 33000 A.

How Irrigation Founded a Scientific University. Day Allen Willey. Illustrated account of the University of Arizona and its work. 2500 w. Sci Am Sup—May 11, 1912. No. 32669.

The Young Engineer (Le Jeune Ingénieur). Ch. de Fréminville. Shall the young technical graduate be a specialist? A study of the advantages and disadvantages of such training. 2500 w. Rev. de Metall—Oct., 1911. No. 28415 E + F.

A Training School for Automobile Workers. Describes features of a system established by the Cadillac Motor Car Co. to equip apprentices for their work. Ills. 1500 w. Ir Age—June 6, 1912. No. 33443 C.

Highway Engineering Education. Arthur H. Blanchard. Read at the Am Road Cong. Reviews the present status of highway engineering and discusses the educational training needed by engineers. 3500 w. Engng & Con—Oct. 16, 1912. No. 36864.

Efficiency

Practicing Efficiency and Knowing Costs. Harrington Emerson. Discusses the tendency to confuse cost-keeping with efficiency. 2000 w. Ir Age—Aug. 1, 1912. No. 34993 C.

Industrial Efficiency. H. L. Gantt, before the Ann. Soc. of Swedish Engrs. Discusses the possibility of greater industrial efficiency, the present tendencies, causes of unrest, and the task idea. 3500 w. Mach, N Y—May, 1912. No. 32520 C.

Some Basic Principles of Efficiency. Henry Harrison Suplee. Discusses fundamental essentials in waste reduction. 3500 w. Cassier's Mag—Sept., 1912. No. 36692 B.

Bonus—Profit-Sharing—Pensions. Waldron H. Rand. Brief description of various schemes of business enterprises. 4500 w. Jour of Acc—Nov., 1911. No. 28382 C.

Personal Efficiency. Charles Frederick Loweth. Address before the College of Engineering, Urbana, Ill. 4000 w. Bul Univ of Ill—May 20, 1912. No. 34375 N.

Efficiency of Engineering Applied to Mining. Glenville A. Collins. Suggestions for improving conditions. 2000 w. Min & Engng Wld—April 20, 1912. No. 32242.

The Interest of Employees in Efficiency of Operation. W. W. Finley. Address before the Richmond Ry. Club. Discusses various phases of the problem. 2500 w. Ry Age Gaz—May 3, 1912. No. 32574.

See also Labor and Management, under INDUSTRIAL ECONOMY.

Electrical Economics

Discussion on "The Responsibility of Electrical Engineers in Making Appraisals," "Depreciation as Related to Electrical Properties." Chicago, June 27, 1911. Papers by H. M. Byllesby, and by Henry Floy are discussed. 25000 w. Pro Am Inst of Elec Engrs—Nov., 1911. No. 28208 F.

The Appraisal of Electric Properties and the Uses to Which Appraisals May be Put. Halbert P. Gillette. Address before the Seattle Elec. Club. Considers 12 uses, discusses some of them in detail. 3000 w. Engng & Con—Nov. 8, 1911. No. 27788.

Buying and Selling Electrical Energy (Di Una Soluzione del Problema della Compra-Vendita dell'Energia Elettrica). Ricardo Arno. Mathematical paper before the International Congress of Applied Electricity. Serial. 1st part. 1500 w. Industria—Oct. 15, 1911. No. 28476 D.

Engineering

The Works of the Engineer and the World's Peace. George Duncan Snyder. Reviews the work of the engineer showing its influence. 3000 w. Engineering Magazine—Aug., 1912. No. 34752 B.

The Work, Aim and Conduct of the Engineer. Charles T. Main. Considers matters of importance to engineers of high standing and essential to success. 9500 w. Jour Assn of Engng Socs—March, 1912. No. 31785 C.

Fundamentals. Onward Bates. Address on engineering practice and engineers. Discussion. 10000 w. Jour W Soc of Engrs—Nov., 1911. No. 29066 D.

The Engineer and the Future. E. D. Meier. An optimistic forecast of work to be accomplished by trained engineers. 1800 w. Jour Am Soc of Mech Engrs—Jan., 1912. No. 29925 D.

Is the Right Man in the Right Place? Guido Sacerdote. Remarks on the present positions held by engineers in America. 2500 w. Am Mach—Nov. 16, 1911. No. 28059.

The Commercial Development of Chemical Engineering Processes. Jasper Whiting. Read before the Int. Cong. of Ap. Chem. Discusses the evolution of chemical engineering processes. 5000 w. Eng News—Oct. 3, 1912. No. 36576.

Possibilities for the American Engineer in South America. A. R. Vejar. Discusses mainly the industrial development now taking place in Chile and the possibilities for profitable engineering work. 5000 w. Jour Assn of Engng Socs—Dec., 1911. No. 29932 C.

Engineering Supervision

Notes on the Development of Engineering Supervision for Steel Working Plants. Alex. L. Hoerr. Reviews briefly recent changes in the management of industrial plants, pointing out the value of engineering supervision. 2500 w. Pro Engrs' Soc of W Penn—March, 1912. No. 32123 D.

Estimating

Preparing Estimate Specifications. Joseph V. Woodworth. An example of how specifications should be prepared to enable a manufacturer to estimate on the manufacture of an article in quantities. 800 w. Am Mach—July 4, 1912. No. 34201.

Cost Estimating for Jobbing Work. J. A. Furer. Describes the organization and procedure in the Philadelphia Navy Yard. 2200 w. Marine Rev—Sept., 1912. No. 35953 C.

Exhibitions

The Royal Agricultural Society's Show. An account of the Royal Show being held at Doncaster, describing exhibits. Ills. 6000 w. Engng—July 5, 1912. Serial. 1st part. No. 34472 A.

Hardware, Ironmongery and Oil Engineering Exhibition. Editorial review of exhibits at Olympia. Ills. 3000 w. Engng—Sept. 13, 1912. No. 36267 A.

The International Engineering and Machinery Exhibition. Joseph Horner. An account of the exhibition at Olympia, illustrating and describing exhibits. 8000 w. Engng—Oct. 4, 1912. Serial. 1st part. No. 36849 A.

Express Companies

Statistics of Express Companies. Abstract of the Interstate Commerce Commission's report for the year ending June 30, 1910, Covering 13 companies. 2500 w. Ry Age Gaz—March 13, 1912. No. 31209.

Factory Work

An Analysis of Factory Work. Extracts from an address by Herman Schneider at a dinner of the Chicago Commercial Club, on the problem created by the increase in enervating tasks and the decrease in those that energize. 3000 w. Ir Age—Nov. 16, 1911. No. 28053.

Filing Systems

A Filing System Suggested for Use of Engineers. H. L. Botsford. Explains a filing and index system. 3000 w. Min & Engng Wld—Jan. 6, 1911. No. 29482.

Filing and Indexing of Tracings. E. G. Chenoweth. Explains methods used in the Erie shops. 1200 w. Am Engr—Aug., 1912. No. 34934 C.

Finance

Railway Capital: Bonds vs. Stocks. William Z. Ripley. Considers the causes for the extensive bond issues in recent years. 3000 w. Ry Age Gaz—Dec. 1, 1911. No. 28567.

Germany

Social Burdens in the German Industries (Les charges sociales de l'industrie Allemande). Maurice Bellom. Discussion on recent legislation affecting German industries. Serial. 1st part. 4400 w. Genie Civil—July 27, 1912. No. 35587 D.

Indexing

Library Science as an Adjunct to Engineering. Louise B. Krause. An outline of the work of a professional librarian in a large engineering firm. 3000 w. Eng Rec—March 2, 1912. No. 30982.

Indexing Technical Articles. Henry M. Wood. Gives details of a method for making a card index for special classes of papers and clippings. 2500 w. Am Mech—Nov. 2, 1911. No. 27646.

Industrial Betterment

The Commonwealth Steel Co.'s Improvements. Illustrated description of the machine shop, store room, and club house at Granite City, Ill. 2500 w. Ir Trd Rev—March 21, 1912. No. 31451.

Industrial Diseases

Industrial Lead Poisoning. James O. Clifford. Describes plumbism, its symptoms, effects, prevention, dangers, etc. 3500 w. Min & Sci Pr—July 6, 1912. No. 34353.

Industrial Finance

Financing an Industry (Die Finanzierung der Industrie). Felix Somary. Reviews the necessary preliminary steps in the formation of any industrial plant. 3600 w. Elektrotech u Maschinenbau—June 2, 1912. No. 33547 D.

Industrial Property

The International Association for the Protection of Industrial Property. An account of the Congress recently held in London and some of the questions discussed by various members present. 5500 w. Engng—June 7, 1912. Serial. 1st part. No. 33787 A.

Industry

Work, and the Elements that Enter Into the Building Up of an Industrial Enterprise. John Edson Sweet. 2500 w. Sib Jour of Engng—Jan., 1912. No. 30824 C.

Building Modern Industry in a Technical and Aesthetic Sense (Der moderne

Industriebau in technischer und ästhetischer Beziehung). Karl Bernhard. Articles on the cost of construction and the cost of production with reference to several branches of industry. Ills. Serial. 1st part. 4200 w. Zeitschr des Ver deutscher Ing—July 20, 1912. No. 35539 D.

Instruction Cards

The Instruction Card as a Part of the Taylor Plan of Management. Frank B. Gilbreth. Read at meeting of the Society to Promote the Science of Management, Boston. Also abstract of discussion. Considers types and supplements to cards. 8000 w. Ind Engng—May, 1912. No. 33035 C.

Installation of the Card System for All Workmen of the Eschweiler-Reserve Mines in Nothberg (Einführung der Kartenkontrolle für die gesamte Belegschaft der Grube Eschweiler-Reserve bei Nothberg). Herr Beissel. Description of the mode of arrangement of the cards, and the utility of a time system. Ills. 2400 w. Glückauf—May 4, 1912. No. 33512 D.

Insurance

Needful Co-operation of Engineers with Underwriters. H. L. Vorse. Aims to show the need of co-operation to guard against faulty plans, poor materials, etc. 2000 w. Jour Assn of Engng Socs—Oct., 1912. No. 37029 C.

Interstate Commerce

The Commerce Commission's Report. Reviews the last annual report of the Interstate Commerce Commission. 2000 w. Ry Age Gaz—Dec. 22, 1911. No. 29162.

Investments

Mining Stocks and Investments. Percy E. Barbour. Shows pitfalls in broker's circulars, and gives information of value to investors. 3000 w. Jour Worcester Poly Inst—Jan., 1912. No. 30031 C.

Japan

Great Industrial Development of Kyushu, Japan. Carl F. Deichman. Illustrated account of recent improvements. 5000 w. Far East Rev—Feb, 1912. No. 31867 N.

Labor

Labour Unrest in the United Kingdom. John B. C. Kershaw. An examination of British industrial conditions, discussing causes of international importance. 4500 w. Engineering Magazine—April, 1912. No. 31546 B.

Labour Unrest in the United Kingdom. John B. C. Kershaw. This second article of a series discusses remedies and reforms suggested by a study of conditions. 5000 w. Engineering Magazine—May, 1912. 32348 B.

Sir David Dale; Ironmaster, Conciliator, Arbitrator. James Douglas. An account of the work of a great engineer in reconciling the interests of employer and employee. 7500 w. Engineering Magazine—May, 1912. No. 32339 B.

The Efficiency of Labor. Charles Buxton Going. The fourth of a series of seven articles on "The People and the Trusts." An interesting study of the systems and the underlying principle. Ills. 5500 w. Am Rev of Revs—Sept., 1912. No. 35920 C.

Workmen's Compensation in Europe and America. Mancius Smedes Hutton. A synopsis of European legislation and its results. 6000 w. Engineering Magazine—July, 1912. No. 33969 B.

Employer's Liability and Workmen's Compensation. Miles M. Dawson. Abstract of paper read before the Metal Trds. Assn. Discusses the purpose of laws bearing on this subject, the recommendations of commissioners, European laws, etc. 3500 w. Mach, N Y—May, 1912. No. 32521 C.

The History of Famous Strikes. T. M. Prudden. Brief review of important strikes and their results. 3500 w. Yale Sci M—Feb., 1912. No. 30848 C.

The Watertown Arsenal Labor Trouble. Max H. C. Brombacher. Explains peculiarities of the efficiency system as tried there, and the causes of the trouble. 7500 w. Ir Age—Jan. 11, 1912. Serial. 1st part. No. 29983 C.

Government Work Shop Management. W. S. Peirce. Discusses the arsenal labor troubles from the official side. 5000 w. Ir Age—Feb. 22, 1912. No. 30705 C.

The Rock Island Arsenal Labor Trouble. Max H. C. Brombacher. Critical discussion of the trouble and the attack on scientific management. 2500 w. Ir Age—Feb. 1, 1912. No. 30194 C.

The Coal Strike. Detailed Account of the past week's proceedings in England in connection with the coal strike. 5500 w. Col Guard—March 8, 1912. No. 31257 A.

Strike and Lock-Out Legislation. Editorial review of recent legislation, connected with lock-outs and strikes, in the British dominions and European countries. 2000 w. Engng—March 8, 1912. No. 31260 A.

Workings of the Erdman Act. Charles P. Neill. Abstract of part of Bul. 98 of the Bureau of Labor. An act which provides for the mediation and arbitration of controversies. 3500 w. Ry Age Gaz—March 29, 1912. No. 31638.

Legislation on Night Work by Men, Women and Children Employed in French Industries (L'Etat Actuel de la Législation sur le Travail de Nuit des Hommes, Femmes et Enfants Employés dans l'Industrie Francaise). A. Bean. Regulation on the hours of night labor by women and girls, and boys under 18 years. 2600 w. Genie Civil—Feb. 10, 1912. No. 31405 D.

The New Eight-Hour Law. George A. King. Full text is given and discussed. 2000 w. Eng Rec—June 15, 1912. No. 33721.

The Proposed National Eight-Hour Law. Protests against the bill to limit the labor of mechanics and others employed on government work to eight hours a day. 2500 w. Ir Age—March 21, 1912. No. 31426 C.

The Attitude of Labor: A Review. H. F. Buchanan. Aims to point out the causes of restlessness and discontent among the laborers of British collieries, indicating some of the proposed remedies. 4500 w. Col Guard—March 22, 1912. No. 31729 A.

American and Foreign Wages and Efficiency. W. L. Saunders. Notes based on a recent trip around the world and the observation of conditions in various countries. 2000 w. Compressed Air—April, 1912. No. 31920.

The National Labor Exchanges. Robert à-Ababrelton. Read before the Ec. Sec. of the British Assn. An account of the work of the Labor Exchanges, and its aims. 3000 w. Jour Soc of Arts—Nov. 3, 1911. No. 27998 A.

A System of Employing Labor. Explains a scheme of operation of an employment bureau of manufacturers of Racine, Wis. 1400 w. Ir Age—Feb. 29, 1912. No. 30853 C.

On the Buying of Labor. Jonathan Thayer Lincoln. Read at meeting of Nat. Assn of Cotton Mfrs. Discusses the labor problem and the improvement of conditions. 3500 w. Mfrs' Rec — April 25, 1912. No. 32362.

Careful Choice of Men; Its Importance. Sterling H. Bunnell. A plea for care in selecting employees, explaining advantage of keeping employees informed of output, trade conditions, etc. 2000 w. Am Mach —Jan. 11, 1912. No. 29532.

Efficiency of the Bituminous Coal Mine Employe. W. J. Louck. Discusses the use of intoxicants, immigrant mine workers, etc. 2500 w. Min & Engng Wld—Jan. 20, 1912. No. 29868.

Employes of the Smelting and Refining Industries. W. J. Louck. Remarks on the races employed, the small per cent of native laborers, the earnings, conditions, etc. 2200 w. Min & Engng Wld—Dec. 30, 1911. No. 29272.

Hours and Intensity of Steel Works Labor. Sidney G. Koon. A study showing the hours of hard work are fewer than represented. 1200 w. Ir Age—Feb. 1, 1912. No. 30195 C.

Labor Conditions on the Lower Amur. D'Arcy Weatherbe. Discusses the expulsion of Chinese from Russian mines north and east of the Amur. Ills. 1800 w. Min Mag—March, 1912. No. 31642 B.

Labor Conditions of Railway Employees in Prussia (Die Arbeitsverhältnisse der eisenbahnarbeiter in Preussen). Statistics on the labor situation, presenting tables giving age, percentage, hours of labor, invalid and pension service, wage scales, etc. 4200 w. Glückauf —Feb. 3, 1912. No. 31331 D.

Consolidation of Maintenance Forces. G. H. Bremner. Considers what the result would be if all classes of work on a certain territory were carried out by a single gang. 2200 w. Ry Age Gaz—Sept. 20, 1912. No. 36074.

The Mexican as a Track Laborer. J. D. Mathews. Fourth of a series of discussions of the characteristics of the various types of maintenance workmen. Also articles by L. J. Hughes, M. Ganley and others. 4000 w. Ry Age Gaz—Sept. 20, 1912. No. 36075.

See also Convict Labor, under CIVIL ENGINEERING, *Roads and Pavements*, and Labor, under RAILWAY ENGINEERING, *Permanent Way and Buildings*.

Labor Insurance

The Unemployment Insurance Bill. Editorial discussion of the scheme for insurance against unemployment. 2500 w. Engng—Nov. 3, 1911. No. 28034 A.

Unemployment Insurance. John Thompson. Read before the Nat. Assn. of Colliery Mgrs. Discusses unemployment and the methods of insurance brought about by present conditions. 5000 w. Ir & Coal Trds Rev—Nov. 17, 1911. No. 28398 A.

National Insurance: With Special Reference to the Electrical Industry. Jos. J. H. Stansfield. Discusses the provisions of the 1911 act as relating to employers, particularly those engaged in the electrical industry. 3000 w. Elec Rev, Lond—April 19, 1912. No. 32501 A.

The Labor Insurance Laws (Das Versicherungsgesetz für Angestellte). Dr. Butz. A review of the laws which go into effect Jan. 1, 1913. 5600 w. Glückauf—Sept. 14, 1912. No. 36606 D.

Labor Protection and Beneficent Institutions (Die Arbeiterfürsorge und Wohlfahrtseinrichtung). Discusses the profit-sharing and other systems in vogue at the Krupp plant. 1400 w. Stahl u Eisen—Aug. 8, 1912. No. 36107 D.

Labor Saving

The Replacement of the Man by the Machine. Henry Harrison Suplee. Considers the extent to which human effort has been relieved by mechanical devices and the effect on the mechanic. 3500 w. Cassier's Mag—June, 1912. No. 33847 B.

Management

The Efficient Manufacture of Railway Transportation. Harrington Emerson. Gives some practical tests of corporation management ideals as secured in the operation of an important line. 4000 w. Engineering Magazine—June, 1912. No. 33126 B.

The Relation of Capital, Labor, and Efficiency in Manufacturing. A. G. Popcke. Presents constructive proposals for profitable co-operation between employer and employees to reduce the cost of production. 3500 w. Engineering Magazine—Sept., 1912. No. 35446 B.

The Basis of Proper Management. H. L. Gantt. Excerpt from address before Nat. Assn. of Machine Tool Bldrs. Discusses the basis of proper management in task work. 2000 w. Am Mach—Nov. 2, 1911. No. 27649.

Task Work—the Basis of Proper Management. H. L. Gantt. Abstract of a paper read before the Nat. Mach. Tool Bldrs.' Assn. Explains the task idea, giving a detailed description of the task and bonus system. 6000 w. Mach, N Y—Dec., 1911. No. 28544 C.

The Task and a Day's Work. H. L. Gantt. Read before the Tuck Sch. Conference. Outlines the problems encountered in task setting, and the effect of properly set tasks. 4000 w. Ind Engng—Nov., 1911. No. 28399 C.

The Principles of Management. A. Hamilton Church and L. P. Alford. An attempt to fix the basic principles of management, with special reference to the shop and factory. 6000 w. Am Mach—May 30, 1912. No. 33313.

Scientific Management in Use. L. P. Alford. An account of satisfactory results in the shops of the Link-Belt Co. 3000 w. Am Mach—April 4, 1912. No. 31758.

The Man in the Ranks—How He Benefits Through Scientific Management. Ernest S. Suffern. 2500 w. Jour of Acc—Dec., 1911. No. 30009 C.

The Practical Application of Scientific Management to Railway Operation. Wilson E. Symons. A critical discussion from the standpoint of an efficient transportation unit, to which all integral parts must be subordinated. The character of the work, and related matters are presented in statistical form and analyzed. Ills. Also discussion. 12000 w. Jour Fr Inst—Jan., 1912. No. 29922 D.

The Practical Application of Scientific Management to Railway Operation. Continued discussion of the paper by Wilson E. Symons. 12000 w. Jour Fr Inst—Feb., 1912. No. 30703 D.

The Practical Application of Scientific Management to Railway Operation. Wilson E. Symons' closure to the discussion of his paper. 14000 w. Jour Fr Inst—April, 1912. No. 32164 D.

Management: Unsystematized, Systematized and Scientific. Henry P. Kendall. Abstract of paper read at the Tuck School Conference. Compares the functions of the three types. 5500 w. Ind Engng—Nov., 1911. No. 28381 C.

The Economic Administration of Industrial Establishments. John Calder. Read at a joint meeting of the Engng. Club and the R R Club of Altoona, Pa. Discusses organization and its effect on industries, and describes the system in the Remington Typewriter Works. Also editorial. 9000 w. Eng News—Nov. 9, 1911. No. 27758.

The Spirit in Which Scientific Management Should Be Approached. James Mapes Dodge. Abstract of paper at the Tuck School Con. 4000 w. Ind Engng—Nov., 1911. No. 28380 C.

Conference on Business Management. Hugo Diemer. Notes on the Dartmouth Conference where subjects of business efficiency and management were discussed. 2000 w. Am Mach—Nov. 9, 1911. No. 27778.

System in the Lodge & Shipley Machine Shops. Hugo Diemer. Describes this successful shop system. 3500 w. Ir Age—Jan. 4, 1912. No. 29326 D.

The Lodge & Shipley Stores System. E. Stubbs. Explains the system under which lathe parts are economically manufactured in quantities. Ills. 1200 w. Am Mach—July 25, 1912. No. 34740.

The Efficiency of Scientific Management. Addison J. Parry. Brief general review of the movement and its effects. 1600 w. Yale Sci M—Dec., 1911. No. 28740 C.

An Army Officer on Scientific Management. Information from Gen. William Crozier's report of results with the Taylor system in the shops of the Watertown Arsenal. 4500 w. Ind Engng—Dec., 1911. No. 29091 C.

Management at Watertown Arsenal. Fred H. Colvin. A study of the changes in shop management made by Col. Wheeler and Carl Barth, to increase the efficiency of the plant. 2000 w. Am Mach—Sept. 12, 1912. No. 35859.

The Taylor System in Government Shops. The report of the House Committee to investigate various systems of shop management is in general adverse. 3500 w. Ir Age—March 21, 1912. No. 31427 C.

Taylor's Success in the Principles of Factory Organization (Taylors Erfolge auf dem Gebiete der Fabrikorganisation). A. Wallichs. Description of F. W. Taylor's principles in scientific management in the factory. Diagrams. 2000 w. Stahl u Eisen—Jan. 11, 1912. No. 30504 D.

The Application of Scientific Management to the Activities of State and Municipal Government. Frederick A. Cleveland. A memorandum of his remarks at the Dartmouth Conference. 5000 w. Eng Rec—Dec. 2, 1911. No. 28524.

The Distribution of Instructions and Information in Large Industries. F. M. Whyte. Considers methods used by railroads and manufacturing establishments, giving suggestions. Discussion. 10800 w. Pro Cent Ry Club—Nov. 11, 1911. No. 28925 C.

The Science of Management in Practice. Frederic A. Parkhurst. Discusses efficiency as a result of the science of management. 2000 w. Ind Engng—Jan., 1912. Serial. 1st part. No. 29995 C.

Scientific Management. Editorial discussion of the tendency toward specialization in manufacturing methods, stating the main features and advising moderation in the application of the methods. 3500 w. Engng—March 1, 1912. No. 31147 A.

The Successful Operation of a System of Scientific Management. Frank W. Sterling. Describes the practical working of a system of modern management as applied to a plant. Ills. 11500 w. Jour Am Soc of Nav Engrs—Feb., 1912. No. 31495 H.

Scientific Management—A Suggestion. George F. Card. Considers a system to secure greater segregation and close record of machine performance. 1500 w. Am Mach—March 28, 1912. No. 31542.

Scientific Spirit in Management. William C. Redfield. Discusses principles on which scientific management is based. 5000 w. Am Mach—April 18, 1912. No. 32115.

The Vickers System of Management. Notes explaining the system in use at the Barrow Works. 4500 w. Am Mach—April 11, 1912. No. 31859.

Science of Management—The Law of Competitive Planning. A study of competition as a spur to achievement and of what can be accomplished by competitive planning. 3500 w. Engng & Con—May 15, 1912. No. 32907.

Scientific Management and Science. P. Ballard. Discusses recent workshop administration methods. 4000 w. Cassier's Mag—May, 1912. No. 33027 B.

The Psychology of Management. L. M. Gilbreth. A discussion of the effect of mind on work and of work on mind, outlining the method of investigation. 3000 w. Ind Engng—May, 1912. Serial. 1st part. No. 33033 C.

The Fetishism of Scientific Management. John R. Edwards. A critical review of the doctrine, its aims, and accomplishments. 21000 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33825 H.

Industrial Administration and Scientific Management. Forrest E. Cordullo. Discusses the importance of efficient administration and what constitutes scientific management. 6500 w. Mach, N Y—July, 1912. Serial. 1st part. No. 34163 C.

The Planning Department, Its Organization and Function. H. K. Hathaway. Explains the functions of planning departments and describes a plant having such a department in service. 4500 w. Ind Engng—July, 1912. Serial. 1st part. No. 34768 C.

The Mnemonic Symbolizing of Stores under Scientific Management. Howard G. Benedict. Read at Cleveland before the Soc. to Promote the Sci. of Management. Explains a system for symbolizing general stores. 3000 w. Ind Engng—July, 1912. Serial. 1st part. No. 34771 C.

A Simple System for the Small Shop. Explains a system useful in shops employing from 20 to 40 hands. 2500 w Mech Wld—Aug. 23, 1912. No. 35751 A.

General Principles in the Systematic Organization of Machine Shops and Factories (Principes Généraux de l'Organization Systématique des Machines et des Usines). E. Belot. Statement and application of the general principles. 4000 w. Tech Mod—Oct., 1911. No. 28422 E.

Psychologic Influence in the Management of Factories (Influence des Causes Psychologiques dans la Direction des Usines). G. Revol. Individual, local and exterior causes as aiding or hindering the organization. 5800 w. Revue de metall—Oct., 1911. No. 28416 E + F.

A Business Office System of an Engineering Company. A. B. McDaniel. Outlines the system that the writer has found of value in keeping accounts, records and cost data. 1200 w. Eng Rec—Dec. 2, 1911. No. 28522.

Management in the Drafting Room. J. A. Furer. Outlines the system used in a large drafting room. Ills. 3000 w. Am Mach—April 25, 1912. No. 32294.

A Dispatching System for Works Management. John Nelson. Gives the Bullard Machine Tool Co.'s charts, showing costs and progress, with explanation of system. 4000 w. Ir Age—Jan. 4, 1912. (Special.) No. 29320 D.

Principles of Mine Management. Charles A. Chase. Discusses the essentials of efficient management. 6000 w. Eng & Min Jour—Dec. 30, 1911. No. 29238.

Watching Details of Shop Management. John Nelson. Gives a chart system showing the relation of sales and costs to the normal and to one another. 1000 w. Ir Age—May 16, 1912. No. 32898 C.

Efficiency-Engineering Applied to Mining. Glenville A. Collins. Advocates the application of the Taylor system to mining. 4500 w. Bul Am Inst of Min Engrs—Sept., 1912. No. 36309 F.

Management of Ice Plants—Relations Between Manager and Engineer. William Westerfield. Read before the S.-W. Ice Assn. 2000 w. Ice & Refrig—Dec., 1911. No. 28682 C.

Canadian Pacific Shop Management. Describes a plan to credit men with both skill and muscular effort in different classes of work. 1800 w. Am Mach—Dec. 21, 1911. No. 29133.

Mr. Crane Attacks Railway Management. R. T. Crane's views on the education and selection of railway employees. 2000 w. Ry & Engng Rev—Jan. 6, 1912. No. 29500.

Coming Efficiency in Water-Works Management. W. H. Richards. An outline of things necessary and things to avoid to promote efficiency. General discussion. 5500 w. Jour N Eng W-Wks Assn—Dec., 1911. No. 29933 F.

Water-Works Management. Easton Devonshire and William Matthews. Read at London meeting of Inst. of Water Engrs. Suggestions in regard to administration, organization, inspection, etc. 2500 w. Surveyor—Dec. 29, 1911. Serial. 1st part. No. 29613 A.

The Efficiency Movement in the Foundry. C. E. Knoeppel. Read before the Am. Found. Assn. A discussion of the application and economics of scientific management in the casting shops. 4500 w. Foundry—Feb., 1912. No. 30134.

The Scientific Management of a Foundry. Charles J. Simeon. Explains the use of the slide rule for setting piecework prices. 2200 w. Ir Trd Rev—Jan. 4, 1912. No. 29369.

The Scientific Operation of a Foundry. Charles J. Simeon. Describes the use of a slide rule for fixing piece-work prices of molding. 2500 w. Foundry—Jan., 1912. No. 29300.

Economy in the Factory (Haushaltung im Fabrikbetriebe). H. Schwarz. Outlines several systems of practicing effective economy in shops and factories. Forms. Serial. 1st part. 2200 w. Zeit f Werkzeug—May 25, 1912. No. 33530 D.

Economical Management and Betterment in the Metal Foundry (Ueber Betriebsersparnisse und Verbesserungen in der Metallgiesserei). C. Hunger. Address before the German Foundry Association. Two parts. Part 1. 2800 w. Giess Zeit—July 1, 1912. No. 35517 D.

See also Business Administration, Organization, Time-Study, and U. S. Navy, under INDUSTRIAL ECONOMY; Water Works Management, under CIVIL ENGINEERING, *Water Supply;* also Shops, under RAILWAY ENGINEERING, *Motive Power and Equipment.*

Monopolies

The Just Value of Monopolies, and the Regulation of the Prices of Their Products. Joseph Mayer. An investigation aiming to establish principles from which the fair prices of monopolized products can be reliably deduced on a sound basis. 6500 w. Pro Am Soc of Civ Engrs—Jan., 1912. No. 29950 F.

The Just Value of Monopolies, and the Regulation of the Prices of Their Products. Brief discussion of Joseph Mayer's paper. 900 w. Pro Am Soc of Civ Engrs—March, 1912. No. 32136 F.

The Just Value of Monopolies, and the Regulation of the Prices of Their Products.

Continued discussion of Joseph Mayer's paper. 5500 w. Pro Am Soc of Civ Engrs—May, 1912. No. 33225 F.

The Just Value of Monopolies, and the Regulation of the Prices of Their Products. Continued discussion of Joseph Mayer's paper. 4000 w. Pro Am Soc of Civ Engrs—Aug., 1912. No. 35629 F.

Mining Costs

Notes on Mine Accounting. T. H. Sheldon. Excerpt from a paper read before the Cripple Creek Dist. Min. & Met. Soc. A classification of mining costs. 2200 w. Eng & Min Jour—Dec. 23, 1911. No. 29150.

Profit and Safety in Mining. Henry Briggs. Presidential address to the Eastern Branch of the Scottish Fed. Inst. of Min. Students. Discusses the use of machinery where the price of labor is high, and whether mining is getting safer. 4000 w. Ir & Coal Trds Rev—Feb. 9, 1912. No. 30683 A.

See also Iowa, under MINING ENGINEERING, *Coal and Coke.*

Miner's Wages

See Wages, under MINING AND METALLURGY, *Mining.*

Municipal Accounting

See Accounting, under CIVIL ENGINEERING, *Municipal.*

Municipal Government

The Municipal Housekeeping of Moose Jaw, Saskatchewan. Explanation of features in an experiment in city government. 3000 w. Eng News—Aug. 1, 1912. No. 35041.

Municipal Ownership

Physical Appraisal. William C. Boyrer. Discusses the subject in connection with municipal control of public utilities. General discussion. 7000 w. Pro Brooklyn Engrs' Club—Jan., 1912. No. 35488 N.

New York

The New Business Center of the United States. A. E. Stilger. Illustrates and describes recent developments in the 34th Street district in New York's shopping region. 2000 w. Cassier's Mag—Jan., 1912. No. 29884 B.

Organization

Modern Organization. Charles DeLano Hine. First of a series of articles explaining the characteristics and methods of the "unit system" as applied on the greater part of the Harriman lines. 3000 w. Engineering Magazine—Jan., 1912. No. 29200 B.

Modern Organization. Charles De Lano Hine. In this second installment the operation is illustrated by railway examples, broadening the ideals of supervision. 1500 w. Engineering Magazine—Feb., 1912. No. 30021 B.

Modern Organization. Charles DeLano Hine. This third article of a series considers critically the present practice, discussing the problem of restoring balance. 1500 w. Engineering Magazine—March, 1912. No. 30829 B.

Modern Organization. Charles De Lano Hine. Fourth article of a series. Discusses fallacies of accounting. 2500 w. Engineering Magazine—April, 1912. No. 31550 B.

Modern Organization. Charles De Lano Hine. This fifth article of a series discusses supplies and purchases. 2500 w. Engineering Magazine—May, 1912. No. 32344 B.

Modern Organization. Charles Delano Hine. This sixth article of a series discusses line and staff and their interrelations. 2500 w. Engineering Magazine—June, 1912. No. 33127 B.

Modern Organization. Charles Delano Hine. This seventh and last article of a series discusses the genesis and revelation of organization. 2000 w. Engineering Magazine — July, 1912. No. 33970 B.

Recent Developments in the Unit System of Organization. Extracts from the discussion following the address by Chas. DeLano Hine on the adoption of this system on the Harriman Lines. 2000 w. Ry Age Gaz—March 15, 1912. No. 31210.

Practical Efficiency Engineering. A study of the record in improved mechanical department efficiency on the Illinois Central within the past year and a half. Map. 3500 w. Ry Age Gaz—March 8, 1912. No. 31100.

Mechanical Department Organization. Reports more effective service in the improvement in efficiency in the department of the Illinois Central, as a result of increased supervision. 2000 w. Am Engr—March, 1912. No. 31058 C.

Organization in Engineering. Henry Marison Byllesby. Address delivered before the College of Engineering, Urbana, Ill. 3500 w. Bul Univ of Ill—May 13, 1912. No. 34374 N.

Evolution in Track and Signal Maintenance on the Union Pacific. A. M. Foote. Outline of an organization in force during the past two years on a portion of the Union Pacific. 2500 w. Ry Age Gaz—March 15, 1912. No. 31211.

Plan of Organization for a Railway Track Labor Department. William S. Wollner. Rewritten from a report made for the officials of a western railway system. Gives a proposed plan. 2000 w. Ry Age Gaz—March 15, 1912. No. 31213.

Organization for the Season's Maintenance Work. Suggestions for economical and efficient work. 1800 w. Ry Age Gaz—March 15, 1912. No. 31212.

Fundamental Principles of Railway Store-Keeping George G. Yeomans. An argument for departmental organization. 3000 w. Ry Gaz., Lond—Sept. 6, 1912. No. 35991 A.

Maintenance Shop Organization for City Lines. J. C. Thirlwall. Explains the division of duties in a maintenance shop for about fifty city cars without multiple-unit control or air brakes. 4000 w. Elec Ry Jour—Sept. 14, 1912. No. 35968.

Industrial Organization's Demands on Business. J. J. Feeley. Reviews history and legislation on the subject. 4500 w. Ir Trd Rev—April 25, 1912. No. 32364.

Some of the Elements of Factory Organization and Operation. C. B. Auel. Outlines methods of obtaining costs, and discusses their value. 4000 w. Sib Jour of Engng—Feb., 1912. No. 31441 C.

Factors of Economy in Workshop Organization. J. T. Towlson. 1500 w. Prac Engr—Sept. 5, 1912. Serial. 1st part. No. 35992 A.

Organization in Electrical Undertakings. C. M. Shaw. Abstract of paper read before the Incor. Munic. Elec. Assn. Deals with the proper organization of the staff and methods of carrying out the work. Discussion. 4500 w. Elect'n, Lond—June 21, 1912. No. 34210 A.

Power-Plant Efficiency as Determined by the Technical Education of Employees. C. M. Jansky. Report of an investigation made to determine whether the employment of technically trained men in fields usually occupied by unskilled labor increases the efficiency of the plant. 2500 w. Elec Wld—June 8, 1912. No. 33612.

The Problem of a Typewriter Works. John Calder. Excerpt of address given before the Altoona Engng. Club. Explains the scheme of organization. 3000 w. Am Mach—Dec. 21, 1911. No. 29134.

Organization of the Bureau of Water Supply, City of New York. I. M. De Varona. Abstract of paper read before the Am W-Wks. Assn. Diagram and explanation of the general organization and its results. 2000 w. Eng Rec—June 15, 1912. No. 33726.

Survey Work and Organization of the Engineering Department of the Coleman Du Pont Road, Inc., of Delaware. Frank M. Williams. Read before Sec. D. of the Am. Soc. for Adv. of Science. Describes the engineering organization building this highway, 106 miles long, to be given by General Du Pont to the State. 2500 w. Engng & Con—Jan. 10, 1912. No. 29522.

See also Business Administration, under INDUSTRIAL ECONOMY; Costkeeping, under CIVIL ENGINEERING. *Construction*, and Public Works, under CIVIL ENGINEERING, *Municipal*.

Panama Canal Tolls

Relation of Tolls to the Volume of Traffic Through the Panama Canal. From the report of Emory R. Johnson to the Sec. of War, discussing this problem and giving much information on the subject. 13000 w. Engng & Con—Aug. 14, 1912. No. 35228.

The Canal and Transcontinental Traffic. Emory R. Johnson. Abstracted from an official report to the government. Discusses present routes and amount and nature of past and probable future shipments. 5500 w. Ry Age Gaz—Aug. 2, 1912. Serial. 1st part. No. 35051.

See also Panama Canal, under CIVIL ENGINEERING, *Waterways and Harbors*.

Patents

The Gist of the Supreme Court Decision in the Dick Patent Case. Gilbert H. Montague. Gives economic and logical reasons for license restrictions. 6000 w. Engineering Magazine — May, 1912. No. 32340 B.

The Gist of the Proposed Patent-Law Amendments. Gilbert H. Montague. Explains the dangers of legislation for compulsory licenses. 6000 w. Engineering Magazine—June, 1912. No. 33130 B.

The Abuses of Our Patent System. Dr. L. H. Baekeland. Read at a joint meeting in New York, April 19, 1912. Critical discussion of U. S. patent laws. 5500 w. Met & Chem Engng—May, 1912. No. 32648 C.

The More Fundamental Principles of Patent Law. Edwin J. Prindle. Their exposition in a popular form in connection with a typical industrial development, for the purpose of establishing a patent monopoly along any line. Ills. 8000 w. Jour Am Soc of Mech Engrs—July, 1912. No. 34760 D.

Actual and Constructive Patent Infringement. E. D. Sewall. First of a series of articles discussing this subject. 5000 w. Mach, N Y — April, 1912. Serial. 1st part. No. 31670 C.

Patents. William H. Davis. Discusses mainly patents for the protecting of industrial property in the United States, giving related information of value. 10000 w. Sch of Mines Qr—April, 1912. No. 32157 D.

Patent Law and the Nature of Patents. N. C. Thompson. An outline aiming to show what a patent is, and what it is not. 1500 w. Sib Jour of Engng—Oct., 1912. Serial. 1st part. No. 37033 C.

The Modern Rights of Science (Die Technik im modernen Recht). M. Mintz. Discussion on the patent laws of Germany. 3200 w. Zeit d Oest Ing u Arch Ver—Mar. 22, 1912. No. 32053 D.

A Visit to the Science Museum in London (Ein Besuch im Science Museum in London). Conrad Matschoff. Interesting exhibits of patents during the latter part of the 18th and early part of the 19th century in the London museum. Ills. 4000 w. Zeitschr d Ver deutscher Ing—Mar. 9, 1912. No. 32038 D.

Power Costs

See same heading, under ELECTRICAL ENGINEERING, *Generating Stations.*

Problems

"Questions of the Hour." F. A. Delano. Deals particularly with the railway question, the tariff question and the trust question. 4500 w. Ry Age Gaz—Dec. 1, 1911. No. 28566.

Production Costs

The Cost of Production in Engineering Manufacture. Dempster Smith and P. C. N. Pickworth. Detailed study of the cost of material, of labor, and of works maintenance. 1500 w. Prac Engr—July 25, 1912. Serial. 1st part. No. 35151 A.

Profit Sharing

Profitable Sharing vs. Profit Sharing. E. P. Roberts. A discussion of the labor problem followed by general discussion. 11000 w. Jour Cleveland Engng Soc—Dec., 1911. No. 29081 D.

Profit-Sharing as an Incentive to Industry. N. O. Nelson. Read before the Cleveland Chamber of Commerce. Brief discussion of the essentials of the profit-sharing system, and an account of the village of Leclaire, Ill., which benefits by such system. 2000 w. Ir Trd Rev—Jan. 18, 1912. No. 29692.

Profit Sharing in a Wisconsin Plant. Explains features of the stock distribution plan followed by the Baker Manufacturing Co., of Evansville, Wis. 2500 w. Ir Age—July 18, 1912. No. 34639 C.

See also Wage Systems, under INDUSTRIAL ECONOMY.

Progress

The Engineering Basis of Progress. Charles F. Scott. Address before the graduating class of the University of Cincinnati. 2500 w. Elec Jour—Aug., 1912. No. 35359.

Public Utilities

Public Control of Public Utilities. George A. Damon. Abstract of an address at Los Angeles meeting of the A. I. E. E. Discusses some of the problems, favoring public ownership but not public operation. 3000 w. Pro Am Inst of Elec Engrs—Jan., 1912. No. 29944 F.

Electric Franchises. L. A. Gannon. Read before the Union of Canadian Municipalities. Explains the character of a franchise, and discusses difficulties in the city of Quebec. 2500 w. Can Engr—Aug. 29, 1912. No. 35720.

See also same heading, under ELECTRICAL ENGINEERING, *Generating Stations.*

Railway Economics

Opportunities for Economy on Railways. L. C. Fritch. Discusses where and how savings may be effected. 3000 w. Ry Age Gaz—Nov. 24, 1911. Serial. 1st part. No. 28267.

The Development of the Railway Regulating Commission in England. W. M. Acworth. Reviews the history of English law as applied to railways, and the present position of the railway commission. 2000 w. Ry Age Gaz—Nov. 17, 1911. No. 28074.

French Railway Economics. Editorial on the situation of the French railway companies from the financial and economical standpoints. 2200 w. Engng—Nov. 3, 1911. No. 28036 A.

Railway Finance

Railway Share Capital. William Z. Ripley. Explains the principles of limited liability as applied to capital stock, the nature of preferred stock, etc. 3000 w. Ry Age Gaz—Nov. 24, 1911. No. 28268.

Reichsanstalt

The Work of the Reichsanstalt in 1910. Brief account based upon the official report by Prof. Warburg. Ills. 3500 w. Engng—Dec. 1, 1911. Serial. 1st part. No. 28783 A.

Routing Systems

Scheduling Work in the Railroad Repair Shop. Ernest Cordeal. Discusses practical methods for time control of every operation. 3000 w. Engineering Magazine—Nov., 1912. No. 37111 B.

A Routing and Follow-up System. Fred H. Colvin. Explains a system that has proved successful in keeping work moving steadily through the plant. Ills.

2200 w. Am Mach—Sept. 5, 1912. No. 35777.

Specialization

Mechanical and Commercial Limits of Specialization. Irvine Haworth. Considers the conditions under which specialization progresses. 3000 w. Prac. Engr—May 31, 1912. No. 33666 A.

Stores-Keeping

Record of Shop Materials. Gives forms used by metropolitan service departments for drawing parts and materials from stock rooms. 3500 w. Automobile—Sept. 12, 1912. No. 35931.

See also Organization, under INDUSTRIAL ECONOMY.

Strikes

The Coal Strike: Its Causes and Consequences. T. Good. Discusses this labor difficulty in Great Britain. 4000 w. Cassier's Mag—June, 1912. No. 33845 B.

A Review of Coal Strike in England. Cecil Toone. Discusses the effects of the strike on central stations and other industries. 3000 w. So Elect'n—July, 1912. No. 34492.

Textile Industries

The Development of the Textile Industries of the United States. Frank W. Reynolds. A general statement of present conditions throughout the country. 6000 w. Jour Am Soc of Mech Engrs—Dec., 1911. No. 28735 C.

Timekeeping

A Uniform Timekeeping System Which Will Eliminate Pay-Day Disputes. R. O. McDill. Remarks on systems used, with details of a system found satisfactory. 1200 w. Engng & Con—July 17, 1912. No. 34606.

Time Study

An Analysis of Practical Time-Motion Studies. George H. Shepard. A study of working methods preparatory to scientific rate fixing. 4000 w. Engineering Magazine—July, 1912. No. 33964 B.

Time Study Observations. N. E. Adamson, Jr. Discusses different methods of discovering faults in machine operation and manual labor. 2500 w. Ir Age—Nov. 16, 1911. No. 28055.

Elementary Time Study as a Part of the Taylor System of Scientific Management. H. K. Hathaway. An exposition of the principles and methods upon which scientific management is based. 8000 w. Ind Engng—Feb., 1912. No. 30443 C.

The Place of Motion Study in Scientific Management. Frank B. Gilbreth. An explanation of this plan for eliminating waste. 4500 w. Ap Sci—March, 1912. No. 31780 C.

Productive Betterment by Time Studies. N. E. Adamson, Jr. Shows how time observations have developed improvements in plant operation, equipment and arrangement. 4000 w. Ir Age—April 4, 1912. No. 31760 C.

To Reduce Costs, Study the Work. George K. Hooper. Discusses what cycle time study observations may accomplish. 2000 w. Ir Age—June 13, 1912. No. 33653 C.

Two-Turret Lathe Instruction Cards. H. W. Reed. Gives two cards based on elementary time study under the Taylor system, applying to two pieces made on a turret lathe. 1500 w. Am Mach—June 6, 1912. No. 33435.

See also Drilling, under CIVIL ENGINEERING, *Construction*.

Trade

British Trade in Hungary: Openings for Manufacturers of Machinery. Discusses the falling off of British trade and the reasons. 2000 w. Engr, Lond—Dec. 15, 1911. No. 29188 A.

Transportation Costs

Cost of Transportation on the Erie Canal and by Rail. From Bul. 21, Bureau of Ry. Economics. Gives an analysis and estimate of cost of transportation on the Erie Canal, seeming to show that it is more expensive to send goods by the canal than by rail. 2500 w. Ry Age Gaz—Nov. 24, 1911. No. 28269.

United States

The Industrial Progress of the United States of America. James Douglas. Interesting review of the influences that have caused the rapid development, the important legislation, etc. Also discussion. 15800 w. Jour Soc of Arts—Nov. 24, 1911. No. 28647 A.

U. S. Navy

The Business Management of the Navy. G. v. L. Meyer. Explains what has been accomplished in the effort to introduce modern, efficient business methods into the navy. 2000 w. Sci Am—Dec. 9, 1911. No. 28687.

The Science of Management. G. J. Meyers. Discusses the laws that govern it. 8000 w. Jour Am Soc of Nav Engrs—Nov., 1911. No. 28930 H.

Valuation

Going Value. Frank F. Fowle. A review and discussion of the more prominent methods of determining going value, with particular reference to public utilities. General discussion. 19500 w. Jour W Soc of Engrs—Feb., 1912. No. 31198 D.

Going Value. Frank F. Fowle. A review and discussion of the more prominent methods of determining going value, with particular reference to public utilities. 10400 w. Pro Am Inst of Elec Engrs—Aug., 1912. No. 35373 F.

Development Cost or "Going Value" of Public Service Companies. From a report by Halbert P. Gillette to the Everett (Wash.) Light & Water Co. Gives the part bearing on this subject. 9800 w. Engng & Con—June 20, 1912. No. 34099.

A Comparative Study of the Four Principal Methods of Appraising the Value of Public Utilities, with Special Reference to the Valuation of the Freeport (Ill.) Water Works Properties. From a report to the city of Freeport by a Commission. 6500 w. Engng & Con—Oct. 2, 1912. Serial. 1st part. No. 36470.

The Appraisal of Public Service Properties as a Basis for the Regulation of Rates. Continued discussion of the paper of C. E. Grunsky. 1200 w. Pro Am Soc of Civ Engrs—Sept., 1912. No. 37095 F.

The Principles of Valuing Property with Special Reference to Industrial Enterprises. Henry K. Rowell. Discusses the leading principles for ascertaining the value of property. 7000 w. Jour Am Soc of Mach Engrs—Sept., 1912. No. 36299 D.

Stock Value and Mine Value. Alfred C. Lane. A study of mining stock values. 4500 w. Can Min Jour—Nov. 1, 1911. Serial. 1st part. No. 27680.

The Organization for and Methods and Results of Physical Valuation in Nebraska. E. C. Hurd. Deals with the valuation of railroads and other public utility properties. 4000 w. Engng & Con—Dec. 27, 1911. No. 29260.

Wages

The Fixing of the Wages and Working Hours of English Railway Employees by Conciliation Boards and Arbitrators. Mr. Röhling. 5800 w. Bul Int Ry Cong—Nov., 1911. No. 28745 G.

The Arbitration of Locomotive Engineers' Wages. Editorial on the question before the Arbitration Commission now investigating the demands of higher wages by the locomotive engineers on the railways east of Chicago. 2500 w. Eng News—Aug. 22, 1912. No. 35400.

Effect of Wage Advances on Employees Compensation. Information from Bul. 28, Bureau of Ry Economics, giving a study for the year ending June 30, 1911. 1500 w. Ry Age Gaz—April 5, 1912. No. 31804.

The Coal Mines (Minimum Wage) Bill. Text of the bill recently introduced in the House of Commons. 2000 w. Col Guard—March 22, 1912. No. 31728 A.

Coal Mines (Minimum Wage) Act. Gives the text of the act which received the Royal Assent on March 29. 2000 w. Col Guard—April 4, 1912. No. 31993 A.

The Minimum Wage in British Coal Mining (Der Mindestlohn im britischen Steinkohlenbergbau). Dr. Jüngst. Review of conditions in the British coal industry, and text of the Minimum Wage Bill. 3800 w. Glückauf—May 11, 1912. No. 33515 D.

See also Labor, under INDUSTRIAL ECONOMY.

Wage Systems

Copartnership and Profit Sharing as a Solution for the Wages Problem. John B. C. Kershaw. Gives details of practical success in the United Kingdom, discussing methods of overcoming obstacles. 5000 w. Engineering Magazine—Sept., 1912. No. 35444 B.

The Task and Bonus System. H. L. Gantt. Abstract of an address before the Nat. Assn. of Machine Bldrs. A general description of the system and results. 2300 w. Am Mach—Nov. 16, 1911. No. 28058.

How Bonus Works on the Santa Fé. Fred H. Colvin. Explains the plan as used and how it works. Ills. 3500 w. Am Mach—Jan. 4, 1912. Serial. 1st part. No. 29348.

Bonus System on Los Angeles Aqueduct. Gives the rules of operation and method of computing bonus footage and earnings. Ills. 1500 w. Mines and Min—June, 1912. No. 33367 C.

Piece-Work and Bonus Systems in Interborough Rapid Transit Company Shops. A report of methods of payment introduced in New York City for adopting this system. 3500 w. Elec Ry Jour—April 6, 1912. No. 31848.

Piece-Work and Premium Systems. Frank Richards. Gives the writer's estimate of the premium system. 1800 w. Ir Age—March 14, 1912. No. 31163 C.

Use of Piecework System on the Jamaica Government Railway. Frank Richmond. Describes the work and gives rates paid. 1200 w. Ry Age Gaz—Oct. 18, 1912. No. 36889.

A Sliding Scale Premium System. John Nelson. Explains the Whitcomb-Blaisdell Machine Tool Co.'s method of equalizing production cost. 2000 w. Ir Age—March 14, 1912. No. 31161 C.

A Group System of Wage Payment. C. B. Auel. Its main features and advantages are explained. 2500 w. Am Mach—Nov. 23, 1911. No. 28227.

American and European Wages and Efficiency. William L. Saunders. Observations on a recent trip around the world.

Considers Germany the most formidable competitor. 1800 w. Ir Age—Feb. 29, 1912. No. 30855 C.

A Review of Existing Wage Systems. C. B. Auel. Brief explanation of systems in use. 6500 w. Am Mach—June 13, 1912. No. 33641.

Wages Systems. J. Walter and A. E. Brewerton. Discusses the systems in use and explains a system evolved by the writers. 1700 w. Elec Rev, Lond—June 14, 1912. No. 33917 A.

Wage Systems in Germany. B. Buxbaum. Explains how the various wage systems are looked upon by the German workman. 3000 w. Am Mach—Nov. 2, 1911. No. 27647.

Welfare Work

Welfare Work of a Large Manufacturing Company. Hamilton A. Rogers. An illustrated account of the work of the Westinghouse Electric & Mfg. Co. for their employees. 2000 w. Elec Jour—Feb., 1912. No. 30847.

Welfare Work in German Industries. C. A. Tupper. An account of measures for improving shop and living conditions of employees. 3000 w. Ir Age—Jan. 25, 1912. No. 29984 C.

The Care of Workmen in Industrial Plants (Arbeiterfürsorge in industriellen Grossbetrieben). G. Bode. Paper read before the *Verein Deutscher Maschinen-Ingenieure* taking up the subject of provision for dwellings, bathing facilities, etc., for employees, and giving examples of some such places. Ills. Serial in 2 parts. 1st part. 2300 w. Glaser's Ann—Dec. 1, 1911. No. 29748 D.

See also Town Planning, under CIVIL ENGINEERING, *Municipal*.

MARINE AND NAVAL ENGINEERING

Accidents

An Amazing Tale of the Sea. Illustrated description of how a schooner sheered forty feet from the stern of a destroyer off Cape Hatteras. 700 w. Sci Am—Jan. 20, 1912. No. 29839.

Ash Expellers

New Type Ash Expellers of the U. S. S. Cyclops. J. F. Metten. Illustrated description. 1200 w. Jour Am Soc of Nav Engrs—Nov., 1911. No. 28938 H.

Australia

The Australian Navy. An illustrated account of the launching of the flagship "Australia," and information concerning Australian and New Zealand ships. 1200 w. Engng—Oct. 27, 1911. No. 27734 A.

Auxiliary Machinery

Auxiliary Machinery for Internal Combustion Engined Vessels. W. R. Cummins. Read before the Inst. of Marine Engrs. Gives a list of auxiliary machinery required on a moderate-sized liner, and discusses the motive power used to drive it. 4000 w. Mech Engr—April 26, 1912. No. 32836 A.

Barges

The First American Built Diesel-Engined Oil Barge. Illustrated description of the 300-h. p. Diesel engine of the 200-ft. steel motor barge for the Standard Oil Co., N. Y. 2000 w. Int Marine Engng—March, 1912. No. 30996 C.

The Comparative Costs of Repairs to Barges of Treated and Untreated Timbers; Cost of Timber and Steel Barges Compared. From a paper by A. E. Hageboeck, read before the Am Wood Preservers' Assn. 2000 w. Engng & Con—April 24, 1912. No. 32322.

Steel Barges for Mississippi River Improvement Work. Plan and specifications to which these barges are built. 2500 w. Engng & Con—April 24, 1912. No. 32321.

Barocyclonometers

The Barocyclonometer. C. F. Talman. Illustrated description of an instrument that indicates the proximity of typhoons. 900 w. Sci Am—Oct. 19, 1912. No. 36874.

Battleships

Influence of the United States on the World's Battleship Designs. R. M. Watt. Shows that the plan of placing all turrets on the center-line has been almost universally adopted. Ills. 2000 w. Sci Am—Dec. 9, 1911. No. 28689.

Recent Progress in Warships and Machinery. Editorial on the work of the past year in the British Navy. 3000 w. Engng—Dec. 29, 1911. No. 29619 A.

Some Military Principles Which Bear on Warship Design. Sir Reginald Custance. Read before the Inst. of Nav. Archts. Discusses principally gun armament, accuracy of fire in battle, armor and speed. 4500 w. Engng—March 29, 1912. No. 31893 A.

Battleship Distribution and Battleship Design. Editorial on the tendency of battleship design, especially as shown in the British fleet. 2200 w. Engng—May 10, 1912. No. 32987 A.

Recent Advances in the Art of Battleship Design. D. W. Taylor. Discusses modern battleships from the characteristics of offensive power, speed and endurance and defensive power. 7500 w. Jour Fr Inst—May, 1912. No. 33201 D.

Progress of Warships and Machinery Under Construction in England. Half-yearly report of the progress in this work in royal and private shipyards in the country. 1500 w. Engr, Lond—July 12, 1912. No. 34721 A.

Dreadnoughts of the French Marine (Les Dreadnoughts de la Marine Francais). M. Honoré. Description of the launching of the new battleship "Paris," with details of its size and equipment. Ills. 4400 w. Genie Civil—Oct. 5, 1912. No. 36684 D.

Modern Battleship Armament. Charles F. Clise. Considers some of the present-day problems in this field. 2000 w. Yale Sci M—Feb., 1912. No. 30850 C.

Essential Armament and Sub-Surface Protection in Battleships (Armamento principale e difesa subaquea delle navi da battaglia). S. Orlando. Takes up the ideas of modern battleship construction especially of the "Dreadnought" type. Ills. 14000 w. Rivista Marittima—Dec., 1911. No. 30641 E + F.

The Armament and Protection of Battleships. Salvatore Orlando. Abbreviated translation read in Rome, Italy. Location of turrets, and defence below water. 3000 w. Engng—Jan. 12, 1912. No. 29912 A.

Battleship Florida, the Latest United States Dreadnought. Henderson B. Gregory. Illustrated detailed description of the vessel and its equipment, with report of trial. 5000 w. Int Marine Engng—May, 1912. No. 32598 C.

U. S. S. Florida. Illustration, with description of vessel and machinery, and report of recent trials on the Rockland course. 11000 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33833 H.

Analysis of the Trial Trips of the Battleship Florida. Sidney G. Koon. 1200 w. Int Marine Engng—July, 1912. No. 34155 C.

U. S. S. Wyoming. H. L. Brinser. Illustration, description, and report of official trial. 8500 w. Jour Am Soc of Nav Engrs—Aug., 1912. No. 36338 H.

The Battleships of the New "Kaiser" Class. Gives data concerning the building of Germany's first turbine Dreadnoughts. Ills. 1200 w. Engr, Lond—March 29, 1912. No. 31896 A.

H. M. S. "Conqueror." Describes this British battleship and its equipment, reporting trials. Ills. 700 w. Engng—June 21, 1912. No. 34220 A.

The Japanese Battleship "Kawachi." Illustrations with brief description. 300 w. Engng—July 26, 1912. No. 35167 A.

Two New Naval Vessels under Construction for Cuba. Illustrations, with description, of the gunboat Patria, and the cruiser, Cuba. 1500 w. Int Marine Engng—Jan., 1912. No. 29305 C.

See also Cruisers, under MARINE AND NAVAL ENGINEERING.

Boilers

Development of the Marine Boiler in the Last Quarter-Century. George W. Melville. The evolution of design and efficiency of the water-tube boiler. 6500 w. Engineering Magazine—Jan., 1912. No. 29202 B.

The Conversion of Niclausse into Babcock & Wilcox Boilers on the U. S. S. Colorado and Pennsylvania. C. N. Offiley. Illustrates and describes the work. 700 w. Jour Am Soc of Nav Engrs—Nov., 1911. No. 28931 H.

The Evolution of the Scotch Marine Boiler. Sinclair Couper. From *The Engng. Rev.* Traces the evolution of this boiler from the types that preceded it, showing its development. Ills. 3500 w. Boiler Maker—Feb., 1912. No. 30343.

Some Boiler Experiences at Sea. An account of troubles due to improper treatment and other causes. Ills. 3000 w. Boilermaker—Nov., 1911. No. 27797.

Results of Experiments with a Water-Tube Boiler, with Special Reference to Superheating. Harold E. Yarrow. Read before the Inst. of Nav. Archts. Gives results of recent important experiments. Ills. 3000 w. Mech Engr—April 5, 1912. No. 31990 A.

On the Solignac-Grille Boiler and Its Application in French Channel Steamers. G. Hart. Read before the Inst. of Nav. Archts. Explains the reasons which led to the employment of a device for insuring a regular circulation, illustrates and describes this boiler and its installation on the torpedo-boat "Kabyle," the "Le Nord" and "Pas de Calais." 6000 w. Engng—April 5, 1912. No. 31999 A.

Bulkheads

See Ship Design, under MARINE AND NAVAL ENGINEERING.

Bunkers

Modern Methods of Bunkering Steamers. F. C. Coleman. Illustrated description of methods securing speed and cleanliness. 1200 w. Sci Am Sup—Dec. 16, 1911. No. 28986.

The Firing of Bunker Coal and Coal Cargoes. Gives important points made in a report in connection with bunker fires. 1200 w. Engng — July 12, 1912. No. 34718 A.

Cables

Practical Points on Anchor Cables (Erfahrungen mit Schiffsankerketten). W. Thele. Notes on the breaking point of cables under tension. Ills. 1400 w. Stahl u Eisen—Apr. 4, 1912. No. 32016 D.

Canal Boats

Model Experiments on Canal Navigation and the Accompanying Effects Between Canal-Boats and Canal-Profiles (Modellversuche über den Schiffahrtsbetrieb auf Kanälen und die dabei auftretende Wechselwirkung zwischen Kanalschiff und Kanalprofil). H. Krey. Experiments on the design of canal boats to give least resistance and wave action. Ills. 5000 w. Zeitschr d Ver deutscher Ing—May 18, 1912. No. 33574 D.

Canal Tugs

Producer-Gas Canal Tugs. Illustrated account of boats built for the Lehigh Coal and Navigation Co. 1200 w. Rudder—Nov., 1911. No. 27736 C.

Coasting Steamers

Old American Sound and Coasting Steamers. Francis B. C. Bradlee. Illustrates and describes some of the better known old-time steamers. 3500 w. Int Marine Engng—April, 1912. Serial. 1st part. No. 31702 C.

Collapsible Boat

A New Type of Collapsible Boat. N. C. Johnson. Illustrated detailed description of a boat that can be carried as hand luggage. 4000 w. Rudder—July, 1912. No. 34349 C.

Colliers

Steel Steam Collier Newton. Illustrated description of the vessel and its machinery. 3000 w. Int Marine Engng—Dec., 1911. No. 28610 C.

The Largest Naval Collier in the World. K. G. Martin. Illustrated detailed description of the naval collier Cyclops, built by the Cramp Co. 1500 w. Int Marine Engng —Dec., 1911. No. 28612 C.

The United States Turbine-Driven Naval Collier Neptune. Illustrated description of this vessel and its equipment. 2000 w. Int Marine Engng—April, 1912. No. 31703 C.

The United States Collier Neptune. Illustrated description. 1800 w. Engr, Lond—May 10, 1912. No. 32994 A.

Notes on the Performance of the Reduction Gear and of the Bridge-Control System of the U. S. S. Neptune. W. W. Smith. 9500 w. Jour Am Soc of Nav Engrs—Aug., 1912. No. 36339 H.

Naval Collier Orion. Illustrated description of a vessel completed in nine months and three days. 1500 w. Marine Rev—Oct., 1912. No. 36812 C.

See also Propulsion, under MARINE AND NAVAL ENGINEERING; and Coal Handling, under MECHANICAL ENGINEERING, *Transporting and Conveying.*

Compasses

The Gyrostatic Compass. Abstract of a discourse by George K. B. Elphinstone, on "The Gyrostatic Compass and Practical Applications of Gyrostats." 2000 w. Engr, Lond—March 1, 1912. No. 31156 A.

The Sperry Gyro-Compass. Illustrated detailed description of this compass which is in practical service. 3500 w. Engng —May 31, 1912. No. 33671 A.

Theory and Operation of the Gyroscope and the Sperry Gyroscopic Compass. R. E. Gillmor. Explains its principles and gives instructions for its care and operation. Ills. 8000 w. Pro U S Nav Inst—June, 1912. No. 33974 E.

The New Navy Gyroscopic Compass. Illustrated detailed description of the Sperry gyro-compass. 2500 w. Sci Am —June 29, 1912. No. 33988.

The German Marine Gyroscopic Compass (Le Compas Gyroscopique de la Marine Allemande). M. Pineau. Description of the latest Anschütz compass. Ills. 2200 w. Rev Gen des Sciences—Aug. 31, 1912. No. 36194 D.

The Telefunken Compass. Illustrates and describes this new apparatus devised for the determination of direction by wireless, explaining the arrangement. 1500 w. Elect'n, Lond—May 24, 1912. No. 33448 A.

Method for Compensating the Deviations of a Compass (Come si possa compensare stabilmento la quadrantale di una bussola di grande momento magnetico). L. Tonta. Mathematical discussion. 4000 w. Rivista Marittima—Oct., 1911. No. 28502 E + F.

Simplified Methods of Compass Correction. R. A. Koch. Describes methods that have worked successfully. 2500 w. Pro U S Naval Inst—June, 1912. No. 33976 E.

Conventions

Thirteenth General Convention of the Naval Engineering Society (XIII. Hauptversammlung der Schiffbautechnischen Gesellschaft). Reports some of the papers read on Steam Turbines, Propellers, Gas Turbines, etc. Ills. Serial. 1st part. Zeit f d Ges Turbinenwesen—Dec. 10, 1911. No. 29719 D.

The Thirteenth General Convention of the Naval Engineering Society (Die 13. Hauptversammlung der Schiffbautechnischen Gesellschaft). O. Flamm. General report on the convention, with abstracts of papers read. Serial. 1st part. Schiffbau—Dec. 13, 1911. No. 29730 D.

Cranes

Double Cantilever 120-Ton Floating Crane at the Polo Dockyard. Illustrated detailed description of a crane of exceptional size, now in use at the Austrian Naval Dockyard on the Adriatic. Plate. 2000 w. Engng—Dec. 29, 1911. No. 29618 A.

Recent Giant Cranes in Ship Yards (Neue Riesenkrane für Schiffswerften). Brief description of some new types. Ills. 2000 w. Schiffbau—Jan. 10, 1912. No. 30586 D.

The Mechanical Transporting of Heavy Materials from One Vessel to Another (Le Transbordement mécanique des matières pondéreuses d'un navire à un autre). J. E. Giraud. Description of various marine cranes and derricks. Ills. Serial. 1st part. 3200 w. Génie Civil—Nov. 4, 1911. No. 28857 D.

120-Ton Double Floating Crane for the Austrian Navy Yard at Pola (Grue flottante double de 120 tonnes des chantiers navals de Pola-Autriche). M. Gerard. Details and plans of its construction. Ills. and Plate. 1500 w. Rev Industrielle—Jan. 20, 1912. No. 30630 D.

See also Cranes, and Derricks, under MECHANICAL ENGINEERING, *Transporting and Conveying.*

Cruisers

The Battle-Cruiser. Burnell Poole. Illustrations and descriptions of the British "Lion" and the German "Moltke" and their performance. 2000 w. Engineering Magazine—July, 1912. No. 33963 B.

The Battleship Cruiser "Lion" of the British Navy (Le currassé-croiseur "Lion" de la Marine britannique). M. Gouriet. Brief description of this recent addition to the British Navy. Ills. 3000 w. Génie Civil—Jan. 20, 1912. No. 30617 D.

H. M. Battle-Cruiser "Lion." Illustrated detailed description of a battleship now undergoing steam trials. The power of the machinery far exceeds any warship which has yet been constructed. Plates. 8000 w. Engng—Jan. 5, 1912. No. 29677 A.

The German Battle-Cruiser "Moltke." Illustrations with brief description of interesting features. 1200 w. Sci Am—June 22, 1912. No. 33866.

The Imperial German Cruiser Gochen. Illustrated description of the most recent armored cruiser added to the German Navy. 700 w. Eng'r, Lond—Sept. 6, 1912. No. 36005 A.

The Design of Cruisers. Brief discussion of recent changes and the difficulties due to the nature of the services of such ships. 2000 w. Engr, Lond—May 17, 1912. No. 33275 A.

The Launch of the Japanese Battle-Cruiser "Kongo." An account of the launching. 1500 w. Engng — May 24, 1912. No. 33464 A.

The Japanese Battle-Cruiser "Kongo." Elevation and plan, with photographs of the work in progress. Plate. 2200 w. Engng—May 17, 1912. No. 33272 A.

The New Japanese Battle Cruisers—Launch of the Congo. F. C. Coleman. Information concerning four cruisers under construction, especially describing the "Kongo." Ills. 3000 w. Int. Marine Engng—Aug., 1912. No. 34969 C.

The Chinese Training Cruiser "Ying Swei." Illustration, drawings and description of a training vessel recently built for China. 1600 w. Engng—Dec. 22, 1911. No. 29469 A.

Italy's First Turbine-Driven Cruiser, the San Marco. Dagnino Attilio. Illustrated description with report of trials. 900 w. Int Marine Engng—Dec., 1911. No. 28608 C.

Davits

New Types of Davits. Brief descriptions, with illustrations. 800 w. Sci Am—May 25, 1912. No. 33048.

The Welin Davit for Launching Lifeboats. Axel Welin. Abstract of a paper read before a meeting at the Am. Museum of Safety in New York. Illustrated detailed description of this device and its operation. 2000 w. Eng News—May 23, 1912. No. 33066.

Dead Reckoning

On the Measurement and Automatic Recording of Dead Reckoning. F. R. S. Bircham. Read before the Inst. of Nav. Archts. Reviews previous inventions of this kind, explains the requirements, and describes the instrument. Ills. 6500 w. Engng—April 19, 1912. No. 32475 A.

Destroyers

U. S. S. Beale. Henderson B. Gregory. Illustration, description, and report of trial performance of this torpedo-boat destroyer No. 40. 4500 w. Jour Am Soc of Nav Engrs—Aug., 1912. No. 36335 H.

U. S. S. Jouett and Jenkins. Henderson B. Gregory. Report of contract trials performance. 1000 w. Jour Am Soc of Nav Engrs—Aug., 1912. No. 36336 H.

Description and Trials of U. S. Torpedo Boat Destroyers Warrington and Mayrant. W. B. Robins. Illustrates and describes these oil-burning destroyers, equipped with Zoelly turbines, reporting trials. 6500 w. Jour Am Soc of Nav Engrs—Nov., 1911. No. 28928 H.

Description and Trials, U. S. Torpedo Boat Destroyer Patterson. W. B. Robins. 1500 w. Jour Am Soc of Nav Engrs—Nov., 1911. No. 28936 H.

The French Destroyer Bouclier. Illustrated description. 600 w. Engr, Lond—Dec. 15, 1911. No. 29193 A.

French Destroyers Dague and Cimeterre. Illustrates and describes these new vessels and their equipment. 500 w. Engr, Lond—Aug. 16, 1912. No. 35481 A.

The 700-Ton Turbine-Driven French Destroyer "Bouclier." Brief description. 500 w. Engng—April 19, 1912. No. 32470 A.

The New American Torpedo Boat Destroyers (Die neueren Amerikanischen Torpedobootszerstörer). Description of these boats and their equipment with the new Cramp turbines. Serial. 1st part. 1200 w. Die Turbine—Nov. 20, 1911. No. 28845 D.

Torpedo Boats and Torpedo Destroyers (Les Torpilleurs et les Contre-Torpilleurs). M. Laubeuf. Historical sketch; motive power of torpedoes, and the practice of other nations. Ills. 8000 w. Mem Soc Ing Civ de France—May, 1912. No. 36179 G.

See also Torpedo Boats, under MARINE AND NAVAL ENGINEERING.

Diesel Engines

Diesel Engines. Sir J. Fortescue Flannery. Considers their advantages. 2500 w. Marine Rev—Feb., 1912. No. 30428.

The Application of the Diesel Engine to the Propulsion of Large Steamships (Die Verwendung von Dieselmaschinen zum Antrieb von grösseren Seeschiffen). W. Kaemmerer. Cites examples of present usage on large vessels, with the necessary modifications. Ills. Serial. 1st part. 4500 w. Zeitschr des Ver deutscher Ing—Jan. 20, 1912. No. 30567 D.

Diesel Engines for Ocean Ships. George Sherwood Hodgins. Discusses the Diesel type of engine for this service. 1800 w. Marine Rev—April, 1912. No. 32112 C.

Some Aspects of Diesel Engine Design. D. M. Shannon. Read before the Inst. of Engrs. and Shipblds. in Scotland. Detailed discussion of features of interest requiring attention. 3000 w. Mech Engr—May 3, 1912. Serial. 1st part. No. 32878 A.

Diesel Engines for Naval Purposes. A. K. Atkins. A discussion of the advantages and disadvantages of types and of the Diesel engines over steam-driven ships. 6000 w. Pro U S Nav Inst—June, 1912. No. 33978 E.

The Use of Diesel Engines for the Propulsion of Ships (L'Emploi du Moteur Diesel à la propulsion des navires de haute mer). O. H. Wildt. Describes the exclusive application of these engines in the new 1900 ton tank ship *Vulcanus*. Ills. 7000 w. Gènie Civil—July 20, 1912. No. 35583 D.

Application of the Diesel Engine for Marine Service (De Toepassing van Dieselmotoren aan boord van zeeschepfen). J. H. H. Verloop. Description of the changes necessary. Ills. 4800 w. De Ingenieur—Oct. 7, 1911. No. 28469 D.

Performance of Notable Sea-Going Diesel Engined Vessels. F. Muller van Brakel. Illustrated description of the ocean-going cargo boat *Vulcanus*, with account of experiences at sea, particulars from the fuel bill, etc. 200 w. Int Marine Engng—Sept., 1912. No. 35686 C.

The Economy of the Diesel-Engined Ship (Die Wirtschaftlichkeit der Diesel-Motorschiffe). Richard Colell. Comparative review of the cost of driving vessels by Diesel engines and ordinary steam engines. 5600 w. Schiffbau—April 24, 1912 No. 32726 D.

The Propulsion of Battleships (La Propulsion des Navires de Combat). M. Drosne. The application of the Diesel engine on battleships. Serial. 1st part. 4500 w. Tech Mod—Dec., 1911. No. 29779 D.

The Carels Diesel Marine Engine. Illustrates and describes an engine of the two-cycle single-acting type capable of burning the heaviest oils on an economical consumption. 1000 w. Engng—Jan. 19, 1912. No. 30175 A.

The Diesel Oil Engine, Geared Turbine, and Suction Gas Engine. A discussion, introduced by E. L. Orde, before the N. E. Coast Inst. of Engrs & Shipbuilders, on the relative possibilities as compared with the reciprocating engine for marine propulsion. Also editorial. 4500 w. Mech Engr—April 12, 1912. Serial. 1st part. No. 32267 A.

A Slipping Clutch for Diesel Marine Engine Installations. Illustrates and describes the Koreiwo clutch widely used in Russia. 1500 w. Int Marine Engng—Feb., 1912. No. 30213 C.

100-Shaft-Horse-Power Reversible Diesel Marine Engine. Illustrated description of engines working on the two-cycle principle for ship propulsion. 1500 w. Engng—Feb. 16, 1912. No. 30798 A.

A New Marine Diesel Engine. Illustrated detailed description of the 500-h.p. two-cycle marine Diesel engine, with remarks on the 1,000 h.p. 4-cylinder stationary type engine. 3500 w. Engr, Lond—April 19, 1912. No. 32462 A.

Large Russian Vessels Propelled by Diesel Engines. J. Rendell Wilson. Illustrates and describes interesting examples of Russia's Diesel fleet. 1500 w. Int Marine Engng—Jan., 1912. No. 29304 C.

Russian High-Speed Marine Diesel Engines. J. Rendell Wilson. Illustrates and describes engines built by Ludwig Noble. A vertical Diesel engine of 180 h. p. that weighs but 33 lbs. per h. p. for marine uses. 2200 w. Int Marine Engng—July, 1912. No. 34154 C.

Diesel Engines in Whalers. J. Rendell Wilson. Describes 20 h.p. engines of vessels for service in the Antarctic. Ills. 1200 w. Marine Rev—May, 1912. No. 32817 C.

Oil-Tank Steamer Driven by Diesel Engines. Illustrates and describes three oil-engine-driven petroleum tank ships recently ordered, and their engines. 1000 w. Engng—April 19, 1912. No. 32469 A.

See also Barges, Motor Ships, Oil Engines, and Tank Vessels, under MARINE AND NAVAL ENGINEERING; Diesel Engines, and Oil Engines, under MECHANICAL ENGINEERING, *Combustion Motors*.

Docks

See same heading, also Terminals, under CIVIL ENGINEERING, *Waterways and Harbors*.

Dockyards

Engineering Works at the Rosyth Naval Dockyard. Illustrated detailed description of the important works in progress on the Firth of Forth, involving an expenditure of between £3,000,000 and £4,000,000. Plates. 10500 w. Engng—Jan. 19, 1912. Serial. 1st part. No. 30172 A.

Dreadnoughts

Latest Dreadnoughts for South American Republics. Illustrates and describes recent naval construction for Argentina and Brazil. 5000 w. Int Marine Engng—Jan., 1912. No. 29307 C.

The Cost of the New "Dreadnought" Type of Battleships (Sul costo delle navi estere tipo "Dreadnought"). L. Barberis. Review of the costs of this type in the various countries, with tables. 9600 w. Rivista Maritima—Nov., 1911. No. 29809 E + F.

A Comparison of the Cost of Dreadnoughts in England, Germany, France, Austria, and the United States. Translated from an article by Louis Barberis, in *Revista Marittima.* 3000 w. Jour Am Soc of Nav Engrs—Feb., 1912. No. 31496 H.

Dredges

Notes on Hydraulic Dredge Design. M. G. Kindlund. Brief discussion of problems in the design of hydraulic dredging plants and long discharge pipe lines. 3000 w. Int Marine Engng—May, 1912. No. 32594 C.

Dredges (Les Dragues). A. Baril. Illustrated description of various types of French, German, English and American deep-sea dredges. 7000 w. Rev de Mecan—Aug. 31, 1912. No. 36192 E + F.

Dredges Operated by Oil Engines. Illustrates and describes two dredges operated in part by oil engines in the interest of economy. 1800 w. Eng News—Sept. 12, 1912. No. 35923.

Feathering Paddle Wheels for U. S. Self-Propelling Hydraulic Dredges. Illustrated detailed description of the paddle wheel construction. 1500 w. Eng & Min Jour—Aug. 15, 1912. No. 35234.

Marysville Dredge No. 4. Robert E. Cranston. Illustrated description of a new dredge. 1800 w. Min & Sci Pr—Dec. 9, 1911. No. 28972.

Shell Suction Dredger Used in the Dutch Shell Lime Industry. F. Muller von Brakel. Detailed description, with elevation and plan. 1500 w. Int Marine Engng—May, 1912. No. 32593 C.

The Danish Suction Dredge Graadyb. Axel Holm. Illustrated description of a recently built 900-ton suction hopper dredge. 1500 w. Int Marine Engng—May, 1912. No. 32596 C.

The French Bucket Dredger Bassure de Baas. Illustrated description of a dredger designed for dredging very hard grounds. 1500 w. Int Marine Engng—May, 1912. No. 32592 C.

Two Large Canal and Harbor Dredgers. Brief illustrated descriptions of the dredge Corozal for the Isthmian Canal Commission, and the twin screw hopper dredge Labrus. 800 w. Int Marine Engng—May, 1912. No. 32597 C.

Recovering Burned Dredge Machinery. Lewis H. Eddy. An account of work of recovery requiring 104 days. Much the same methods were used as are employed in dismantling a dredge. 1500 w. Eng & Min Jour—July 13, 1912. No. 34425.

Self-Dumping Dredges with Wide Jaws (Neuere Selbstgreifer mit grosser Oeffnungsweite). Wintermeyer. Description of recent improvements in clam-shell dredges. Ills. 2100 w. Glückauf—Dec. 23, 1911. No. 29716 D.

Experiments with Automatic Dredges (Versuche mit Selbstgreifern). Herr Kammerer. Describes comparative tests of various sorts with the Flensburg and Hamburg self-acting clam-shell dredges. Ills. 2000 w. Zeitschr des Ver deutscher Ing—April 20, 1912. No. 32720 D.

Plans for a Frühling Suction, Hopper Dredge (Entwurf eines Sauge-Hopper-Baggers nach dem System Frühling). M. Popp. Eight plates giving details for construction of this type of dredge. 4000 w. Schiffbau—May 8, 1912. No. 33539 D.

Cost of Dredging 32,000,000 Cu. Yds. of Material With Sea-Going Government Dredges in 1911. Report of the performance and cost of work of 23 U. S. seagoing dredges. 4000 w. Engng & Con—Sept. 25, 1912. No. 36350.

See also Panama Canal, under CIVIL ENGINEERING, *Waterways and Harbors;* Pipe Friction, under MECHANICAL ENGINEERING, *Measurement,* and Dredges, under MINING AND METALLURGY, *Mining.*

Dry Dock

Twenty Thousand-Ton Pontoon. Floating Dry-Dock. Drawings and description of the dry-dock for the marine terminal of the Grand Trunk Pacific Ry. at Prince Rupert, B. C. 2500 w. Int Marine Engng—Feb., 1912. No. 30211 C.

The Dry-Dock at Ashtabula, Ohio. E. C. Bowen, Jr. Illustrated description of a dry-dock of mass concrete construction, built during the seasons of 1910-1911. 2200 w. Eng News—March 14, 1912. No. 31181.

New Steel Floating Dry Docks. Illustrated description of a sectional dock being constructed at Puerto Cabello for the Venezuelan government. 700 w. Marine Rev—April, 1912. No. 32111 C.

Opening of the Naval Drydock, New York. Illustrates and describes methods used in constructing an unusually difficult engineering work. 2500 w. Sci Am—May 25, 1912. No. 33046.

The New Floating Dry-Docks for the British Admiralty. Frederick C. Coleman. Illustrated detailed description of the construction of the two docks ordered for the accommodation of dreadnought and super-dreadnought battleships. 2000 w. Int Marine Engng—Sept., 1912. No. 35685 C.

Floating Dock for Testing Submarine Boats. Illustrated description of a novel construction to enable external-pressure tests to be applied to the hulls of submarine-boats without having recourse to deep-sea hydrostatic diving tests. 500 w. Engng—Feb. 23, 1912. No. 31041 A.

The Construction of the New Floating Docks of the Austro-Hungarian Navy (Die Einrichtung des neuen Schwimmdocks der Oesterreichisch-ungarischen Kriegsmarine). R. Dub. Details in the design and construction of this 22,500 ton dry dock. Ills. Serial. 1st part. 2200 w. Zeitschr des Ver deutscher Ing—Aug. 3, 1912. No. 36158 D.

See also same heading, under CIVIL ENGINEERING, *Waterways and Harbors.*

Electric Power

The Use of Alternating Current from the Electric Plant on Board (Sull' Impiego della Corrente Alternata negli Impianti Elettrici di Bordo). Marco Viani. Presents views on the advantages obtained from alternating currents. 8000 w. Rivista Marittima—Jan., 1912. No. 30642 E + F.

The Electric Propulsion of Ships (Elektrischer Antrieb von Schiffen). W. Wolf. Discusses the arrangement of motors, etc., for applying the electric drive in ships. Ills. Serial. 1st part. 5600 w. Schiffbau—Mar. 13, 1912. No. 32035 D.

See also Propulsion, under MARINE AND NAVAL ENGINEERING.

Exploration Ships

Ship Equipment for the Royal Biological Station at Heligoland (Dienstfahrzeug für die Königliche Biologische Station auf Helgoland). O. Flamm. Details in the design, construction and equipment of the exploratory ships in the service, especially the S.S. Augusta. Ills. and plates. 2200 w. Schiffbau—May 22, 1912. No. 33552 D.

Ferries

Vehicular Ferries in New South Wales. Henry Harvey Dare. Describes the self-propelled ferries, the hand-geared ferries on wire ropes. and the power-driven national ferries. Ills. 2200 w. Inst of Civ Engrs, No. 3958—May, 1912. No. 33163 N.

A Ferry-Boat Propelled by the Current. C. E. Chappell. Brief illustrated description of an arrangement on the Cumberland River, at Clarksville, Tenn. 500 w. Eng News—May 30, 1912. No. 33317.

Gasoline Car Ferry. Illustrated description of car ferry Henderson in use at Evansville, Ind. 600 w. Marine Rev—Sept., 1912. No. 35956 C.

Shallow Draft Ferry Driven by Gasoline (Petrol) Engines. Illustrated description of the steel car ferry "Henderson" designed to carry two 50-foot trolley cars, each weighing 87000 pounds, across the Ohio River at Evansville, Ind., in a draft of about 3 feet. 500 w. Int Marine Engng—Aug., 1912. No. 34971 C.

Ferry Steamer

Three Steam Ferries (Drei Fährdampfer). L. Graemer. Plans and description of three types of small ferries. Ills. and drawings. 2000 w. Schiffbau—Oct. 11, 1911. No. 28491 D.

A Large Railway Ferry Steamer for the Volga. F. C. Coleman. Illustrated description of a boat designed for service under peculiarly difficult conditions. 1000 w. Sci Am Sup—March 9, 1912. No. 31075.

Fishing Boats

Large Steam Fishing Vessels with Refrigerating Plants (Die Grössengrenze für Fischdampfer mit kühlanlage). P. Knipping. Details of construction. Ills. 3600 w. Schiffbau—Jan. 24, 1912. No. 30587 D.

See also Internal-Combustion Engines under MARINE AND NAVAL ENGINEERING.

Freighters

World's Largest Bulk Freighters Built on the Great Lakes. Illustrates and describes two recently built vessels, the largest bulk freight steamers in the world. 2500 w. Int Marine Engng—Sept., 1912. No. 35682 C.

The World's Largest Bulk Freighter. Illustrated description of the Col. James M. Schoonmaker, for service on the Great Lakes. 3000 w. Marine Rev—Nov., 1911. No. 27973.

Gas Engines

The Internal Combustion Engine at Sea. Editorial discussion of the suitability of this engine for larger craft. 1800 w. Engng—Jan. 12, 1912. No. 29908 A.

Gas Power for Ship Propulsion. A. C. Holzapfel. Read before the Inst. of Nav. Archts. Reviews early attempts and gives detailed description and information concerning the gas-driven vessel "Holzapfel I." Ills. 4000 w. Mech Engr—March 29, 1912. No. 31888 A.

Sea-Going Producer Gas-Driven Cargo Vessel Holzapfel I. F. C. Coleman. Plans and description of this gas-powered boat. 3000 w. Int Marine Engng—April, 1912. No. 31701 C.

The Gas-driven Vessel "Holzapfel I." Illustrated description of a successful application of the marine producer-gas engine. 1000 w. Sci Am—Jan. 13, 1912. No. 29544.

Sea-Going Gas-Driven Cargo Vessel. The gas engine cargo boat Holzapfel I is illustrated and the machinery equipment described. 2000 w. Engr, Lond—Feb. 16, 1912. No. 30802 A.

Gasoline Engines

"Closed Circuit" Air Transmission for a Gas-Engined Vessel. Describes and illustrates a marine plant constructed on this system. 2500 w. Engr, Lond—July 26, 1912. No. 35176 A.

See also Diesel Engines, and Steering Gear, under MARINE AND NAVAL ENGINEERING.

Gasoline Engines

See Ferries, under MARINE AND NAVAL ENGINEERING.

Hydroplanes

What Is a Hydroplane? Joseph B. Baker. Illustrated description of types and the aim of the design. 1800 w. Sci Am—Aug. 10, 1912. No. 35106.

The Flying Boat and Its Possibilities. Carl Dienstbach. Illustrated account of how safe flying over water has been attained. 2000 w. Sci Am—Sept. 14, 1912. No. 35915.

Ice-Breaking Steamer

The Ice-Breaking Steamer "Pjotr Welikij." Illustrated description of a powerful vessel, built in Sweden, of interesting design. 700 w. Engng—June 7, 1912. No. 33786 A.

"Imperator"

The Largest Ship Yet Constructed. An illustrated description of the 65,000-ton liner "Imperator." 900 w. Sci Am—July 6, 1912. No. 34288.

The Hamburg-American Company's New 50,000-Ton Liner. Illustrates and describes features of the construction and equipment. 1000 w. Int Marine Engng—Aug., 1912. No. 34966 C.

"Imperator": The Launching of the Ship ("Imperator": Der Stapellauf des Schiffes). R. Schmidt. Illustrated description of mechanism for launching this mammoth vessel. 3200 w. Schiffbau—July 10, 1912. No. 35511 D.

Isherwood System

Isherwood System of Construction. Robert Curr. First of a series of articles describing in detail a small steamer of this type. Ills. 1200 w. Marine Rev—Sept., 1912. Serial. 1st part. No. 35955 C.

Launching

Launching the "Conte di Cavour" (Varo della "Conte di Cavour"). C. Lardera. Description of the launching of a 7800-ton steamer. 4000 w. Rivista Marittima—Oct., 1911. No. 28501 E + F.

Ships Launching in Stralsund Harbor (Schiffsaufschleppvorrichtung in Stralsund-Hafen). W. Schrader. Describing the mechanical appliances, runways, etc., in use for launching small ships. Ills. 1600 w. Schiffbau—Mar. 27, 1912. No. 32037 D.

Launching a Steel Dredge Hull. Lewis H. Eddy. Illustrates and describes the sidewise launching of the hull of the reconstructed Natoma No. 8. 1200 w. Eng & Min Jour—Sept. 28, 1912. No. 36393.

Liberte

Probable Role Played by the Mixture of Explosive Gases in the Destruction of the "Liberté" (Role probable joué par les mélanges explosifs gazeux dans la catastrophe de la "Liberté"). J. Meunier. Results of experimental laboratory tests of explosive gases, such as may have mingled on the vessel. Ills. 7200 w. Génie Civil—Nov. 18, 1911. No. 28862 D.

The Destruction of the Liberté (L'Explosion du Cuirassé "Liberté" en Rade de Toulon). Ph. Tressan. A description of the explosion of the French battleship, on Sept. 25, 1911. Ills. 9000 w. Génie Civil—Oct. 14, 1911. No. 28425 D.

Plans for Raising the Wreck of the Cuirasse "Liberté" (Projects d'Enlèvement de l'Epave du Cuirassé "Libertè"). René Sabines. Presenting the reasons for the removal of the wreck from the Toulon harbor, and outlining several plans for its accomplishment. Ills. 4000 w. Genie Civil—Mar. 16, 1912. No. 32098 D.

Lifeboats

Lifeboats on Ocean-Going Ships and Their Manipulation. Axel Welin. Read before the British Assn. Illustrates and describes recent improvements for the handling of lifeboats, and discusses methods of stowing, types of boats, and related subjects. 3800 w. Engng—Sept. 20, 1912. No. 36495 A.

Motors for Lifeboats. Gives particulars of motor-driven lifeboats now in service, outlining the general conditions required in the construction of the motor and its accessories, and discussing critically a number of types. Ills. 3500 w. Engr, Lond—March 1, 1912. No. 31152 A.

Lighters

Lighters and Lighterage in Harbor Freight Transference. H. McL. Harding. Illustrates and describes types and explains features of the lighterage business, especially New York harbor. 3500 w. Int Marine Engng—Jan., 1912. No. 29306 C.

Lightships

The Effect of Bilge-Keels on the Rolling of Lightships. Part I. George Idle. Part II. G. S. Baker. Read before the Inst. of Nav. Archts. Detailed report of experimental investigations. 6000 w. Engng—April 19, 1912. No. 32474 A.

The New Lightship for the First Station on the Elbe (Das neue Feuerschiff für die erste Station der Elbe). L. Graemer. Description of the ship, and particularly of the light, its accompanying machinery, and siren attachment. Ills. and plates. Serial. 1st part. 2400 w. Schiffbau—June 26, 1912. No. 34533 D.

"Maine"

Destruction of the "Maine" by a Low-Explosive Mine and Her Own Magazines. Illustrations and remarks on the unwatering of this sunken battleship. 800 w. Sci Am—Dec. 23, 1911. No. 29124.

The Raising of the Wreck of the U. S. Battleship "Maine." Official record of the preliminary operations up to June 30, 1911. 5000 w. Engng—March 15, 1912. No. 31530 A.

The U. S. Battleship "Maine." J. T. Bucknill. Deals with points relating to the recovery of the wreck, and considers the theory of an external explosion as a myth. Ills. 5000 w. Engng—June 21, 1912. No. 34218 A.

The Condition of the "Maine" After 13 Years' Submersion. Maximilian Toch. Illustrates and describes the conditions of different materials examined. 1500 w. Eng News—July 4, 1912. No. 34252.

Marine Engineering

Presidential Address of E. Hall-Brown. Considers marine engineering from the point of view of present-day practice, and discusses the proposed changes with the object of attaining greater efficiency and economy. 13500 w. Trans Inst of Engrs & Shipbldrs in Scotland—Oct. 24, 1911. No. 28333 N.

Progress in Marine Engineering During the Past Fifteen Years. Dr. W. F. Durand. Considers the more important features that have marked the progress in this field. 12000 w. Int Marine Engng —March, 1912. No. 30998 C.

Marine Engines

Notes Upon a Marine Engine. W. Veysey Lang. Considers the ordinary triple-expansion, inverted, surface, condensing, marine type engines, their design, size, cylinder liners, cylinder lagging, piston rings, shafting, etc. 1000 w. Mach Wld —Sept. 6, 1912. Serial. 1st part. No. 36258 A.

Effects of the Use of Jackets, Throttling and the Varying of Steam Pressures and Expansions on the Economy of Marine Engines. F. W. Milner. Report of experimental investigations. 5500 w. Jour Am Soc of Nav Engrs—Aug., 1912. No. 36331 H.

A Commercial Type Marine Motor. Illustrated description of the "Djinn" engines, built at Bristol, Eng. 5000 w. Engr, Lond—May 10, 1912. No. 32993 A.

Marine Motor. Notes on an engine built at Dartmouth, Eng., showing that it embodies ideal requirements set forth two years ago. Ills. 4000 w. Engr, Lond—May 3, 1912. No. 32890 A.

Engines and Boilers for a Dutch Colonial Government Steamer. Illustrations, detail drawings, and brief description. 500 w. Engng—May 10, 1912. No. 32986 A.

The Naval Reciprocating Steam Engine, Its Characteristics, Dimensions, and Economics. Ernest N. Janson. A review of the present state of development. 8500 w. Jour Am Soc of Nav Engrs—Feb., 1912. No. 31488 H.

See also Templets, under MECHANICAL ENGINEERING, *Machine Elements and Design.*

Marine Safety

Safeguarding Life and Property at Sea. George A. Soper. Constructive suggestions for an international marine conference. 2500 w. Engineering Magazine—June, 1912. No. 33134 B.

Marine Staging

A Traveling Stage for Marine Construction. Illustrated description of the "Piercy" traveling stage and its successful use in England. 1200 w. Eng News —Nov. 2, 1911. No. 27650.

The Piercy Travelling Stage for Maritime Work (Échafaudage mobile, système Piercy, pour travaux maritimes). Ch. Dantin. Description of this self-propelling staging, and some works where it has been successfully employed. Ills. and Plate. 3500 w. Genie Civil—March 2, 1912. No. 31410 D.

Melville

George Wallace Melville. Review of his career. Photograph. 12500 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33831 H.

Model Tanks

See Resistance, under MARINE AND NAVAL ENGINEERING.

Motor Boats

Stern-Wheel Motor Boats. Lewis C. Allen. Illustrates and describes types of these boats used on American rivers. 1800 w. Int Marine Engng—Nov., 1911. No. 27604 C.

The A. D. A. C. Prize Competition for a 1,000 Mark Motor-Boat (Das A. D. A. C.-Preisausschreiben für ein 1,000 Mark-Motor-Boot). H. Méville. Description of some of the designs submitted, and the three winning designs. Diagrams. 1800 w. Zeit d Mitt Motorwagen Ver—April 15, 1912. No. 32727 D.

Motor Passenger Launch "Violeta." Illustrations with brief description. 600 w. Engng—May 31, 1912. No. 33673 A.

Launching of the Trans-Atlantic Liner Detroit at Port Clinton. Illustrated detailed description of a boat built on Lake Erie to make the trip from Detroit via the Erie Canal and Hudson River, and thence to Europe. 1000 w. Rudder—July, 1912. No. 34350 C.

Power Boat to Attempt the Western Ocean Passage on a Voyage from Detroit to St. Petersburg, Russia. Plan and description of the vessel. 1000 w. Rudder—June, 1912. No. 33425 C.

How to Build a Twenty-Foot V-Bottom Speed Boat, Blue Fish. Fred W. Goeller, Jr. Drawings and description. 4000 w. Rudder—Aug., 1912. No. 34984 C.

The Design of the Rudder and Propeller of Motorboats (Die Anordnung von Ruder und Schraube bei Motorbooten). Herr Wittmaack. Illustrates types of good and faulty design. Serial. 1st part. 2700 w. Zeit d Mitt Motorwagen Ver—July 15, 1912. No. 35548 D.

The Race for the Harmsworth Cup. Thaddeus S. Dayton. Illustrated account of the contest, describing the boats, and discussing lessons concerning racing motor boats. 1800 w. Sci Am—Sept. 14, 1912. No. 35918.

See also Hydroplanes, under MARINE AND NAVAL ENGINEERING.

Motor Ships

The First Transatlantic Diesel Liner. M. B. Cea. Illustrated account of the practical application of the marine combustion motor. 1500 w. Cassier's Mag—Oct., 1912. No. 37155 B.

The Twin Screw Motor Ship Selandia. A description of the ship and details of the engines and their work. Ills. 3500 w. Engr, Lond—March 8, 1912. Serial. 1st part. No. 31265 A.

Success of the First Large Diesel Motor-Driven Motor. J. Rendell Wilson. Illustrated account of the success of the motor ship "Selandia," describing the Diesel engines and their working. 1200 w. Int Marine Engng—April, 1912. No. 31700 C.

Results of Trials of the Diesel-Engined Sea-Going Vessel "Selandia." G. Knudsen. Read before the Inst. of Nav. Archts. Describes the engines and reports results of the first practical trial. 1200 w. Engng—April 5, 1912. No. 31995 A.

Oil-Engined Ships "Selandia" and "Jutlandia." Describes the first oil-driven ships built for regular passenger service, especially considering the machinery. 2000 w. Engng—Feb. 23, 1912. No. 31040 A.

The Motor Ship Monte Penedo. Brief illustrated description of this vessel equipped with Sulzer two-cycle Diesel engines. 500 w. Engr, Lond—Aug. 30, 1912. No. 35898 A.

The Monte Penedo's Engines. Illustrated detailed account of their construction, running and handling. 3000 w. Engr, Lond—Sept. 6, 1912. No. 36003 A.

The German Motor-Driver Ship "Monte Penedo." Describes a vessel, recently constructed for service to South America, propelled by two 4-cylinder, reversible, two-cycle Diesel-Sulzer engines. 1000 w. Engng—Aug. 30, 1912. No. 35891 A.

The German Motor-Driven Ship "Monte Penedo." Illustrates and describes details of the vessel and its equipment. Plate. 3000 w. Engng—Sept. 6, 1912. No. 35998 A.

Sulzer Diesel-Engined Ship for New York-Rio Service. J. Rendell Wilson. Illustrated description of the *Monte Penedo*, a twin-screw vessel of 6500 tons, and its machinery. 2000 w. Int Marine Engng—Oct., 1912. No. 36443 C.

Twin-Screw Motor Ship "Monte Penedo" of the Hamburg-South America Steamship Company (Doppelschrauben-Motorfrachtschiff "Monte Penedo" der Hamburg - Südamerikanischen Dampfschiffs-Gesellschaft). Describes external appearance and internal structure and equipment. Ills. and Plates. 4400 w. Schiffbau—Sept. 25, 1912. No. 36633 D.

The Machinery of the Diesel Ship "Monte Penedo" (Die Maschinen des Diesel-Schiffes "Monte Penedo"). Describes the engines of this first German use of large two-cycle engines for marine purposes. Ills. 2200 w. Zeitschr des Ver deutscher Ing—Sept. 21, 1912. No. 36628 D.

See also Diesel Engines, and Oil Engines, under MARINE AND NAVAL ENGINEERING.

Naval Architects

The German Institution of Naval Architects. Brief review of papers read at meeting of the Schiffbautechnischen Gesellschaft. 5000 w. Engr, Lond—Dec. 1, 1911. Serial. 1st part. No. 28767 A.

The German Naval Architects. A report of the summer meetings of the Schiffbautechnische Gesellschaft, with abstracts of papers. 4000 w. Engr, Lond—June 14, 1912. Serial. 1st part. No. 33944 A.

Naval Materials

Government Testing and Inspection of Material for the Naval Service. Walter F. Worthington. Explains conditions making such testing necessary and describes the method adopted in the Pittsburgh District. 6500 w. Jour Am Soc of Nav Engrs—Aug., 1912. No. 36337 H.

Naval Management

See U. S. Navy, under INDUSTRIAL ECONOMY.

Naval Ordnance

Recent Development in Ordnance. N. C. Twining. Discusses the latest guns and armour designed to meet the demand for higher efficiency. Ills. 2500 w. Sci Am—Dec. 9, 1911. No. 28691.

The Evolution of Naval Armament (L'Evolution de l'Armament Naval). The development of the high-power guns of today. 5800 w. Rev Gen des Sciences—Oct. 30, 1911. No. 28489 D.

See also Battleships, under MARINE AND NAVAL ENGINEERING.

Naval Schools

Notes on the Naval Schools of France and Other Countries (Considerations sur l'école navale en France et a l'étranger). Comparisons between the naval school systems of various countries. Serial. 1st part. 1800 w. Le Yacht—Jan. 27, 1912. No. 30626 D.

Navies

Modern Navies (Les Flottes de Guerre Modernes). M. Gouriet. Comparisons of the leading navies of the world. Serial. 1st part. Ills. 4000 w. Genie Civil—Mar. 23, 1912. No. 32300 D.

Present Standing of Naval and Commercial Vessels (État actuel des marines de guerre et de commerce). A. Croneau. This first article discusses the relative strength of nations in battleships of the Dreadnought type. Ills. Serial. 1st part. 7500 w. Rev Gen des Sciences—Sept. 15, 1912. No. 36669 D.

Navigation

Turning Circles. William Hovgaard. Read before the Inst. of Nav. Archts. Gives an analysis of a number of turning trials aiming to establish the equations of motion for the final turning circle and to give formulae and co-efficients for the determination of its diameter. 9000 w. Engng—March 29, and April 12, 1912. Serial. 2 parts. No. 32272 each A.

Navigation Congress

International Navigation Congress Papers. Abstracts of some of the more important summaries of papers read in Philadelphia. 13000 w. Eng News—May 30, 1912. No. 33322.

Twelfth International Congress of Navigation. Report of the Philadelphia meeting, with abstracts of papers on inland and ocean navigation. 18500 w. Int Marine Engng — June, 1912. No. 33437 C.

The Twelfth International Navigation Congress in Philadelphia (XII. Internationaler Schiffahrtskongress in Philadelphia). This first of a series outlines some of the points to be considered at the meeting of the congress May 23 to 29, 1912. Serial. 1st part. 3200 w. Schiffbau—May 22, 1912. No. 33554 D.

Twelfth International Congress of Navigation at Philadelphia (XIIe Congrès International de Navigation à Philadelphie, Etats Unis). Paul Barrillon. Reviews of some of the more important papers. Serial. 1st part. 5600 w. Genie Civil—Aug. 10, 1912. No. 35591 D.

Navy Yards

Inspection Duty at Navy Yards. D. Parker. Discusses the desirability of inspection departments, the methods and characteristics of efficient inspection, relations of the inspector, results, etc. 11500 w. Pro U S Nav Inst—June, 1912. No. 33971 E.

The Imperial German Navy Yard at Tsingtau (Die Kaiserlich deutsche Werft zu Tsingtau—Kiauschou). Description of this yard for repairs, etc. Ills. 2400 w. Schiffbau—Jan. 24, 1912. No. 30588 D.

Oil Burners

Tests of Oil Burners. Angelo Conti. Report of experiments conducted at the works of the Fore River Shipbuilding Co. 1500 w. Jour Am Soc of Nav Engrs—Nov., 1911. No. 28939 H.

Oil Engines

An Analysis of the Claims of the Marine Internal Combustion Engine. Aims to give facts that will present an unprejudiced statement of the case of oil or steam for marine propulsion. Ills. Also editorial. 4500 w. Engr, Lond—March 15, 1912. No. 31532 A.

The Application of the Junkers Oil Engine to Marine Work. Illustrates the engines for a vessel under construction, explaining the arrangements. 2000 w. Int Marine Engng — July, 1912. No. 34152 C.

Crude Oil Engines. Illustrated description of the type adopted by the Italian Navy. 1000 w. Marine Rev—Aug., 1912. No. 35135 C.

High Powered Marine Oil Engines (Motore ad olio pesante, di grande potenza, tipo marino veloce). Enrico Mariotti. Presents the main characteristics of marine oil engines. Ills. 4200 w. Ingeg Ferro—July 15, 1912. No. 35599 E.

Two-Cylinder Engines (Motori termico a doppio Stantuffo). Edwin Cerio. Reviews some of the modern tendencies in marine engine construction. Ills. 4400 w. Rivista Marittima—July-Aug., 1912. No. 36210 E + F.

German Motor Notes. Illustrates and describes Diesel marine motors built in

North Germany. 2500 w. Engr, Lond—Oct. 11, 1912. No. 36940 A.

A Thirty-Day Non-Stop Run of a Marine Oil Engine. A report of a trial made by Barclay, Curles & Co., Ltd. and the very satisfactory results. 2200 w. Engr, Lond—Jan. 26, 1912. No. 30327 A.

The Nuremberg Marine Oil-Engine. Considers recent developments and applications of this type, giving illustrations and a description of the features in which the Nuremberg type differs from others. 3000 w. Engng—Feb. 9, 1912. No. 30669 A.

Internal-Combustion Engines for German Fishing-Boats. F. Romberg. Abbreviated translation of paper read before the Schiffbautechnische Gesellschaft. Illustrates and describes the Brons engine, as fulfilling the required conditions, and refers to other types. 2500 w. Engng—March 1, 1912. No. 31150 A.

A High-Power Oil Engine for Tugboat Service. Illustrated description of a 300 h.p. 4-cylinder oil engine for the experimental tugboat "Schlepp." 1200 w. Sci Am Sup—May 11, 1912. No. 32670.

The Ocean-Going Oil-Engined Ship "Sembilan." Drawings and description of the vessel and the engines. 1200 w. Engng—March 15, 1912. No. 31527 A.

Semi-Diesel Engine on the Yacht "Mairi." Illustrated description of this yacht, and its engines, fitted with a view to carrying out extensive experiments at sea as to the working of the semi-Diesel type. 2500 w. Engng—Feb. 23, 1912. No. 31036 A.

10-Horse-Power "Monobloc" Marine Oil-Engine. Illustrated description. 600 w. Engng—Aug. 16, 1912. No. 35476 A.

Dahl Oil Burning System. Illustrated description of a system used in a number of Pacific Coast vessels. 1500 w. Marine Rev—Aug., 1912. No. 35134 C.

Hints on the Sale of Marine Oil Engines (Winke für den Verkauf von Schiffsölmaschinen). Conrad Harmsen. Points for the salesman. Diagrams. 4000 w. Motorwagen—July 20, 1912. No. 35546 D.

Motor Ship Eavestone Fitted with Carels Diesel Engines. Photograph, drawings and description of the Carels engine installed. 1500 w. Int Marine Engng—Oct., 1912. No. 36441 C.

The New Hamburg-American Oil Engine Ship "Christian X." Illustrated description of this interesting vessel and the engines by which it is propelled. 2000 w. Eng News—Oct. 3, 1912. No. 36567.

See also Diesel Engines, Dredges, and Gas Engines, under MARINE AND NAVAL ENGINEERING.

Oil Fuel

Economy in the Use of Oil as Fuel for Harbor Vessels. C. A. McAllister. An account of the efficiency of the oil-fuel apparatus recently installed on board the harbor tug Golden Gate. Plate. 1800 w. Soc of Nav Archts & Marine Engrs, No. 12—Nov., 1911. No. 28175 N.

Liquid Fuel Measurement on Oil-Burning Steamships. Howard C. Towle. Considers methods of measurement in use. 2500 w. Int Marine Engng—Aug., 1912. Serial. 1st part. No. 34967 C.

The Substitution of Combustible Liquids for Coal, in Regard to Navigation and Ports, and to the Port of Genoa in Particular (Sulla sostituzione del combustibile liquido al carbone, nei riguardi della navigazione e dei porti, e del porto di Genova particularmente). N. Ronco. Review of the adaptability of oil fuel for the purpose. 8100 w. Ann della Soc d Ing e d Arch Ital—May 16, 1912. No. 34010 E.

Paint

Paint Tests on U. S. Receiving Ship "Hancock," Henry Williams. Discusses the prevention of corrosion of the bottoms of steel ships, and the tests made at the Brooklyn Yard. Ills. 1500 w. Eng News—Sept. 12, 1912. No. 35921.

Piping

The Evolution of Lead-Lined Piping on Shipboard. R. D. Gatewood. Reviews the history of the corrosion on board ship of the non-ferrous metals used in these systems with the results of investigators, and describes a process aiming to remove the chief causes of these difficulties. Ills. 5000 w. Pro U. S. Nav Inst—Dec., 1911. No. 28923 E.

Ports

Equipment of the Amsterdam Harbor (L'outillage du port d'Amsterdam). A. W. Bos. Report read before the Royal Institute of Engineers of Nederland. Map. 2600 w. De Ingenieur—Oct. 28, 1911. No. 28465 D.

Mechanical Installations at the Port of Rotterdam (Les Installations mécaniques du Port de Rotterdam). W. Cool. Report before the Royal Institute of Engineers of Nederland. Ills. 10200 w. De Ingenieur —Oct. 21, 1911. No. 28472 D.

Propellers

Note on the Screw Propeller. H. A. Mavor. An argument for referring propeller experiments to a common standard of comparison; for considering the efficiency of propellers in terms of their efficiency as pumps; and for making experiments on the propeller on the moored ship to determine its efficiency as a pump. 6000

w. Trans Inst of Engrs & Shipbldrs in Scotland—Dec. 19, 1911. No. 30897 N.

Screw Propeller Design. C. W. Dyson. Considers the influence of the ratio between greatest immersed beam and length on load water line on block coefficient and on the choice of ship chart to use of any vessel. 1000 w. Jour Am Soc of Nav Engrs—Feb., 1912. No. 31489 H.

Designing and Drawing a Screw Propeller. George Jepson. From *Elect'n and Mech.* Considers the drawing from the descriptive method in the present article. Ills. 1400 w. Mech Wld—March 8, 1912. Serial. 1st part. No. 31256 A.

Screw Propellers. C. W. Dyson. The determination of diameter, pitch and projected area by means of the effective thrust. 1200 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33835 H.

Screw Propeller Design. A review of the paper by Capt. C. W. Dyson, recently contributed to the *Jour. of the Am. Soc. of Nav. Engrs.* 2200 w. Engr, Lond—Aug. 30, 1912. No. 35894 A.

Fitting the Screw Propeller. W. R. Menzies. Explanation of shop methods from the machining and pitching to the final fitting up of the screw propeller. Ills. 2000 w. Mech Wld—Aug. 16, 1912 Serial. 1st part. No. 35474 A.

Theories and Methods on the Calculation of Propellor Blades (Theorien und Methoden zur Berechnung von Schaubenpropeleern). W. Kiwull. Mathematical discussion and diagrams. Serial. 1st part. 6000 w. Zeit d Mitt Motorwagen Ver—Nov. 15, 1911. No. 29736 D.

Water Propulsion and Some Energy Losses in Propellers (Stromungsverlauf und einige energieverluste in der Schiffsschraube). Kempf. Discussion from (1) purely technical, (2) purely mathematical, (3) experimental bases. Serial. Part I. 2000 w. Die Turbine—Oct. 5, 1911. No. 28451 D.

A Defense from the Attacks of Kempf and Others Regarding Their Propeller Tests and Mine (Abwehr der Kempfschen Angriffe und einiges mehr über seine und meine Propellerversuche). Fr. Gehers. A refutation of some of the statements made by Kempf and a statement of experiments made. Ills. 5600 w. Schiffbau—Feb. 28. 1912. No. 31313 D.

Increased Efficiency in Propellers (Erhöhung des Wirkungsgrades der Schiffsschrauben). Herr Euterneck. Notes on the theory of propeller blades. Diagrams. Serial. 1st part. 3600 w. Schiffsbau—Mar. 27, 1912. No. 32036 D.

Propeller Steering for Heavy Duty (Umsteuerschrauben für grosse Leistungen). W. Helling. Points in the design and construction of propellers for steering. Ills. 3300 w. Zeitschr des Ver deutscher Ing—Sept. 14, 1912. No. 36622 D.

Propeller Erosion. An account of the troubles experienced with propellers of turbine-driven vessels, and the researches carried out by Dr. Silberrad which resulted in overcoming the difficulty. Ills. 2200 w. Engng—Jan. 12, 1912. No. 29905 A.

Determining the Extent of Damage Caused by Ship Propellers on Canal Bottoms, and Means of Relatively Reducing the Same (Versuche zur Feststellung des schädlichen Einflusses der Schiffsschrauben auf die kanalsohle und mittel zur Beseitigung beziehungsweise Verminderung desselben). Describes the action of propellers in scouring canal beds, and gives experiments for rectifying this action by means of a plate under the propeller parallel with the bottom of the canal. Ills. 2800 w. Schiffbau—Sept. 11, 1912. No. 36615 D.

See also Corrosion, under ELECTRICAL ENGINEERING, *Electro-Chemistry,* and Propeller Design, under MECHANICAL ENGINEERING, *Machine Elements and Design.*

Propulsion

Automatic Record of Propeller Action in an Electrically Propelled Vessel. W. L. R. Emmet. Record of experiments, with curve sheets. 500 w. Soc of Nav Archts & Marine Engrs, No. 16—Nov., 1911. No. 28179 N.

Electric Propulsion of Ships. Abstract of a talk by W. L. R. Emmet. 1800 w. Jour Am Soc of Mech Engrs—March, 1912. No. 31568 D.

Marine Propulsion by Electric Transmission. Henry A. Mavor. A summary of papers by W. L. R. Emmet describing the plant for the U. S. collier *Jupiter,* and also details of the machinery equipment for an oil electric tank-barge for Canadian service. Ills. 4500 w. Engng—Sept. 20, 1912. No. 36493 A.

Electric Propulsion of the United States Collier "Jupiter." W. L. R. Emmet. Illustrated description of the electrical equipment for the propulsion of this vessel. 1500 w. Engng—Aug. 23, 1912. No. 35757 A.

Electrical Equipment for the Propulsion of the U. S. Collier Jupiter. Eskil Berg. Detailed description of the principal features of the design and operation, with report of tests. Ills. 1500 w. Gen Elec Rev—Aug., 1912. No. 34952 C.

Propulsion

Electric Propulsion of the U. S. Collier Jupiter. Induction motors fed with energy from steam-driven turbo-alternator drive the propellers. Ills. 1200 w. Elec Wld—Aug. 3, 1912. No. 35063.

Alternative Systems of Propelling Ships. Editorial review of papers read before the Inst of Nav. Archts. 3500 w. Engng—April 5, 1912. No. 31997 A.

Screw Propulsion (L'Hélice Propulsive). P. Lorain. Historical review and mathematical notes on design of screw propellers. Ills. 4500 w. Rev Gén des Sciences —April 15, 1912. No. 32766 D.

Ship Propelling Machinery of Alternative Designs. Editorial review of the discussion of the relative merits and cost of different types of ship-propelling machinery before the N.-E. Coast Inst. of Engrs. & Shipbuilders. 3000 w. Engng —July 19, 1912. No. 34895 A.

Propelling Machinery for Naval Vessels. H. I. Cone. Illustrated review of present conditions and future possibilities in motive power. 2500 w. Sci Am—Dec. 9, 1911. No. 28690.

Report of Shop Tests of the Starboard Propelling Unit of the U. S. S. "Henley." Reports tests made of a combination of reciprocating engine and turbine designed for maximum economy at cruising speed. Ills. 2200 w. Jour Am Soc of Nav Engr—Feb., 1912. No. 31487 H.

Heavy-Oil Engines for Marine Propulsion. G. C. Davison. Considers the main points of difference between the Otto and Diesel cycles and the mechanical problems of heavy-oil engines, their advantages, use, etc. Ills. 6000 w. Soc of Nav Archts & Marine Engrs, No. 15—Nov., 1911. No. 28178 N.

Large Motor Vessels. W. Laas. Discusses the advantages and problems in connection with the introduction of motor-propulsion in high-class vessels. 4500 w. Jour Am Soc of Nav Engrs—Nov., 1911. No. 28932 H.

The Possibilities of the Internal-Combustion Engine Applied to Marine Propulsion. Percy R. Allen. Discusses the direct use of gas and oil fuel at sea. Ills. 9000 w. Cassier's Mag—Dec., 1911. No. 28712 B.

See also Electric Power, and U. S. Navy, under MARINE AND NAVAL ENGINEERING, and Turbo-Generators, under ELECTRICAL ENGINEERING, *Dynamos and Motors.*

Reduction Gears

A Speed-Reduction Gear and Transmission Dynamometer. Illustrated detailed description of reduction gears of the U.S.S. Neptune, arranged from information furnished by H. E. Longwell. 2000 w. Eng News—Nov. 16, 1911. No. 28084.

Westinghouse Marine Reduction Gear. Illustrated description of gears installed on the U.S.S. "Neptune." The underlying principle is the supporting of the pinion shaft in a frame which floats on oil, the pressure on the oil being automatically regulated with the load on the gear. 2200 w. Power—Nov. 21, 1911. No. 28163.

Improvements in Marine Turbine Reduction Gear. H. E. Longwell. Illustrated detailed description of the Westinghouse improved marine turbine reduction gear. 2000 w. Elec Jour—Jan., 1912. No. 30013.

Refrigerating Plants

Refrigerating Plants on Shipboard (Ueber Kühlanlagen auf Schiffen). H. Wagner. States some applications, and discusses advantages and dangers. 3200 w. Kälte-Industrie—Nov., 1911. No. 29723 N.

Resistance

The Residuary Resistance of Vessels. Ernest Saxton White. Read before the N-E. Coast Inst. of Engrs. & Shipbldrs. Discusses the relation between residuary resistance horse-power and forms of vessels. 1200 w. Engng—Nov. 3, 1911. No. 28040 A.

Certain Aspects of Ship Resistance as Disclosed by the Performance of the Corrugated Sided Vessel "Monitoria." Arthur H. Haver. Considers results obtained from this vessel. Discussion. Plates. 14000 w. Trans N E Coast Inst of Engrs and Shipbldrs—Jan., 1912. No. 31640 N.

The Resistance of Some Merchant Ship Types in Shallow Water. Herbert C. Sadler. Gives results of tests made in the experimental tank at the University of Michigan. Illustrated by curves. 1200 w. Soc of Nav Archts & Marine Engrs, No. 4 —Nov., 1911. No. 28167 N.

Some Model Basin Investigations of the Influence of Form of Ships Upon Their Resistance. D. W. Taylor. Gives results of experimental investigations of the effect of shape toward the extremities. Illustrated by curves and contours. 3500 w. Soc of Nav Archts & Marine Engrs, No. 3—Nov., 1911. No. 28166 N.

A Model Test on a Steamer. G. G. Holbrook. Reports experiments made to determine the relation between the actual power required to drive a vessel and the power as determined by a series of model tests. 3500 w. Int Marine Engng—Dec., 1911. No. 28609 E.

The William Froude National Tank. G. S. Baker. Read before the Inst. of Nav. Archts. Supplement to a paper read last year. The present paper describes in detail the small tank, built as an annex to the main tank, which was previously described. Ills. 2000 w. Engng—March 29, 1912. No. 31892 A.

Experiments on the Froude. C. H. Peabody. Report of experiments on the resistance and propulsion of ships by means of a navigable model. Plates. 9000 w. Soc of Nav Archts & Marine Engrs, No. 6—Nov., 1911. No. 28169 N.

Revenue Cutters

The Revenue Cutter Service. Reviews the history of this service. Ills. 2500 w. Marine Rev—April, 1912. No. 32113 C.

Salvage

Pumping Gold Bullion from the Sea. Brief account of recent efforts to salve the treasure of the "Lutine," a vessel sunk on the Dutch coast in Oct., 1799. Ills. 1200 w. Sci Am—Nov. 25, 1911. No. 28271.

The Raising of the Dry-Dock Dewey. L. S. Adams. Description of the methods employed in raising this dock which sank at the Philippine Islands, and the difficulties and problems encountered. Ills. 6500 w. Soc of Nav Archts & Marine Engrs, No. 8—Nov., 1911. No. 28171 N.

French Salvage Dock for Submarines. Illustrated description. 600 w. Engng—April 12, 1912. No. 32274 A.

French Submarine Salvage Boat. Illustrations, with brief description. 300 w. Engr, Lond—Nov. 3, 1911. No. 28042 A.

The Salving of the Submarine Boat A-3. Discusses the question of salving this submarine sunk by collision with the gunboat Hazard. Ills. 800 w. Engng—Feb. 16, 1912. No. 30799 A.

The Salvage of Submarines (Essais de Relevage des Sous-Marins). Andre Dachs. Suggestions for attaching deflated balloons to the sunken vessel, inflating them until vessel rises, when it may be towed to port. Ills. 2200 w. La Nature—May 4, 1912. No. 32759 D.

Salving the Steamer "Jose." Illustrated account of interesting salving of a vessel sunk in the East River at New York. 800 w. Sci Am—Aug. 31, 1912. No. 35650.

Raising and Sinking the "Maine" (Le Renflouement et l'Immersion du Cuirassé "Maine"). E. Lignorelles. Details in the construction of the coffer-dam, the method of floating the vessel, and subsequent sinking. Ills. 3700 w. Génie Civil—May 4, 1912. No. 32782 D.

The Salving of the Steamer "San Giorgio" (Il Salvataggio della R. Nave "S. Giorgio"). An account of the salving of a large sunken steamer in 34 days. Ills. 3200 w. Rivista Marittima—Oct., 1911. No. 28500 E + F.

The Salvage of the San Giorgio. An illustrated account of the accident to this vessel, Aug. 12, 1911, the salvage, repairing, and rearming of this cruiser. 3500 w. Engr, Lond—April 19, 1912. Serial. 1st part. No. 32461 A.

Raising the Italian Cruiser "San Giorgio" (Le Renflouement du Croiseur Cuirasse Italien "San Giorgio"). E. Lignorelles. An account of the method of using compressed-air tanks as floats for raising the ship off a submerged reef. Ills. 4500 w. Génie Civil — June 15, 1912. No. 34583 D.

See also Submarines, under MARINE AND NAVAL ENGINEERING.

Scows

Self-dumping and Automatic Baling Scow. Illustrated description of a new type for refuse disposal and harbor construction. 1000 w. Sci Am—Dec. 16, 1911. No. 28974.

Sea Safety

Report of the Merchant Shipping Advisory Committee. Abstract of this report respecting regulations as to boats, life-saving appliances and other means of ensuring safety of life at sea, with editorial. 6000 w. Engr, Lond—Aug. 23, 1912. No. 35759 A.

Eliminating the Dangers of the Deep. Theodore C. Deitrich. Illustrated discussion of modern steamship construction and ocean transportation, and the safety devices on ocean liners. 3000 w. Cassier's Mag—Aug., 1912. No. 36294 B.

Detecting the Proximity of Icebergs. Illustrated description of the Barnes resistance thermometer, as given in the patent. 2000 w. Elec Rev & W Elect'n—May 11, 1912. No. 32823.

Wireless Telegraphy and Searchlights for Ensuring Safety at Sea. Extracts from the report of the Merchant Shipping Advisory Committee. reviewing the present position and giving recommendations. 3000 w. Elec Rev, Lond—Aug. 23, 1912. No. 35740 A.

Searchlights. J. M. Heslop. Abstract of a lecture before the Sunderland Tech. College Engng. Soc. Discusses the value of marine searchlights on shipboard. Ills. 3500 w. Cassier's Mag—June, 1912. No. 33844 B.

Preventing Collisions at Sea. Sir Hiram Maxim. Outline description of a mechanical application of the bat's sixth sense and its use for warning of obstructions at sea. 2500 w. Sci Am—July 27, 1912. No. 34779.

The Sixth Sense of the Bat. An illustrated article explaining Sir Hiram Maxim's proposal to apply this sixth sense to sea-going vessels. 3000 w. Sci Am Sup—Sept. 7, 1912. No. 35800.

Air to Keep the Water Out. Frank Richards. Suggestions for applications of compressed air to keep vessels afloat in emergencies. 3000 w. Compressed Air—June, 1912. No. 33841.

Life-Saving Appliances at Sea. Editorial review of the report of the Advisory Committee on Safety Appliances at Sea. 3000 w. Engng—Aug. 23, 1912. No. 35756 A.

Safety Appliances for the Care of Inflammable Liquids. (Installations de sureté pour la manutention des liquides inflammables). M. Francois. Description of the Martini-Huneke apparatus especially devised for filling automobile gasoline tanks. Ills. 5600 w. Génie Civil—Dec. 9, 1911. No. 29791 D.

Safety Pontoons for Ocean Vessels. Henry R. Towne. Suggestions for converting the deck-houses into water-tight pontoons which would be left floating and give refuge to the passengers and crew. Short editorial. 2200 w. Eng News—May 2, 1912. No. 32570.

See also Ship Design, under Marine and Naval Engineering.

Shallow-Draft Boats

Shallow Draft Freight and Passenger Side Wheel Steamer, Tjumen-Tobolsk (Flachgehender Fracht- und Passagier-Seitenraddampfer für die Fahrt Tjumen-Tobolsk). Description of this vessel. Ills. and plates. 1700 w. Schiffbau—Dec. 27, 1911. No. 29782 D.

See also Ferries, under Marine and Naval Engineering.

Shipbuilding

The Draftsman in Shipbuilding. S. C. Jenkins. Read before the Local Assn. of Marine Draftsmen, at Norfolk, Va. Reviews changes and development of shipbuilding and gives an outline of the duties of a ship-draftsman. 1800 w. Int Marine Engng—Aug., 1912. No. 34970 C.

Shipbuilding and Marine Engineering in 1911. Reviews the industry during the past year in the United Kingdom. 8500 w. Engng—Jan. 5, 1912. No. 29680 A.

The World's Naval and Merchant Shipbuilding. Reviews information from the last issue of Lloyd's Register. 3000 w. Engng—Jan. 19, 1912. No. 30174 A.

Changes and Extensions in Clyde Shipbuilding Yards. An account of the more important changes and extensions. 2500 w. Engr, Lond — May 31, 1912. No. 33679 A.

Shipbuilding and Engineering Works at St. Nazaire. History and illustrated description of these French works. 4000 w. Engr, Lond—July 5, 1912. No. 34476 A.

Messrs. Workman, Clark & Co.'s Works at Belfast. Reviews the history of this shipbuilding industry and illustrates and describes the plant. Plates. 9500 w. Engng—July 19, 1912. No. 34893 A.

Harland & Wolff's Works at Belfast. Illustrated detailed description of the shipbuilding and engineering works, with a review of their history. 12900 w. Engng—July 5, 1912. Serial. 1st part. No. 34471 A.

The Shipbuilding Industry of Germany. Count Ernst von Reventlow. Reviews marine and naval development in Germany. Ills. 9000 w. Cassier's Mag—April, 1912. No. 31836 B.

Concerning Large Passenger Ships (Ueber grosse Passagierschiffe). R. Schmidt. Reviews the method of classification by tonnage of large ships. Ills. 3600 w. Schiffbau--May 22, 1912. No. 33553 D.

Studies on the Development of Ship Construction (Studie über die Entwicklung des Schiffbaues). Rud. Rothe. Development of design during the past 25 years. Diagrams. 4000 w. Schiffbau—July 24, 1912. No. 35513 D.

Shipbuilding Rules

Deckloads of Timber. Arthur R. Liddell. Critical discussion of the British law relating to deckloads of timber. 1500 w. Engr, Lond—July 26, 1912. No. 35171 A.

Ship Designs

Waves and Ship Form. Arthur R. Liddell. A study of deep-water and sea conditions and the proportions of vessels admissible. 2200 w. Engr, Lond—April 5, 1912. No. 32101 A.

Ship Calculations; Derivation and Analysis of Methods. T. G. Roberts. Gives notes on methods and explanation of the subject along general lines as practiced by the French. 4000 w. Soc of Nav Archts & Marine Engrs, No. 11—Nov., 1911. No. 28174 N.

New Rules for the Integration of Curves. Mark Fargusson. Proposes two rules for the integration of ship curves. 1500 w. Jour Am Soc of Nav Engrs—Aug., 1912. No. 36340 H.

The "Unsinkable" Ship. J. Bernard Walker. Gives cross-sectional views of three famous ships, and discusses improvements that should be introduced into future merchant ships. 2000 w. Sci Am—May 11, 1912. No. 32668.

Amerikalijn en de verschillende electrisch gedreven steenkolen- en goederentransportinrichtingen). H. Van Helden. Describes electrical appliances on board. Ills. and plates. 4500 w. De Ingenieur—April 20, 1912. No. 32744 D.

The Twin-Screw Steamer "Cap Finisterre" of the Hamburg-South America Steamship Co. (Der Doppelschraubendampfer "Cap Finisterre" der Hamburg-Südamerikanischen Dampfschiffahrts-Gesellschaft). E. Foerster. Detailed description of the design and accommodations of this 560-foot vessel. Serial. 1st part. 3800 w. Zeitschr des Verdeutscher Ing—Aug. 24, 1912. No. 36163 D.

Alaska Steamship Company's New Steamship Cordova. Illustrated description of a steel screw steamship, constructed for passenger and freight service. 1200 w. Int Marine Engng—July, 1912. No. 34153 C.

Lumber Steamship for the C. A. Smith Lumber Company. Drawings and description of a vessel designed for special service on the Pacific Coast. 700 w. Int Marine Engng—Aug., 1912. No. 34972 C.

Steamer Thousand Islander. Illustrated description of a vessel designed to care for tourist traffic of the Thousand Islands, and built in record time for service. 4500 w. Marine Rev—Aug., 1912. No. 35133 C.

American-Hawaiian Steamers. Information concerning a fleet building in anticipation of business when the Panama Canal is completed. Ills. 1500 w. Marine Rev—Oct., 1912. No. 36811 C.

Steering

Electro-Hydraulic Power for Steering Vessels. Describes some of the latest systems. Ills. 2500 w. Elec Rev, Lond—Aug. 9, 1912. No. 35286 A.

The Use and Abuse of the Reverse Gear. Robert E. Bowdoin. Explains difficulties with reverse gears of gas engines and gives directions for installing. 1500 w. Rudder—Aug., 1912. No. 34985 C.

Some Notes on Windlass and Steering Gear Engines. F. P. Purvis. Proposes a rule for the diameters of cylinders of such engines. 1700 w. Trans Inst of Engrs & Shipbldrs in Scotland—Nov. 21, 1911. No. 29970 N.

See also Propellers, under MARINE AND NAVAL ENGINEERING.

Submarines

Submarines: Defensive and Offensive. Review of development, especially referring to the British service. 7500 w. Qr Rev—Oct., 1911. No. 27615 N.

The Modern Submarine. D. C. Bingham. Illustrated discussion of this type of vessel, its achievements and development. 3000 w. Sci Am—Dec. 9, 1911. No. 28692.

Modern Submarine Boats for the United States Navy. Illustrated detailed description of these boats and their operation, with related information. 2500 w. Int Marine Engng—July, 1912. No. 34151 C.

The Question of the Submarine Type (Zur Frage der Unterseeboots-Typen). Marcell Klein. Discussion on the relative merits of the various types of single-hull and double-hull submarines. Ills. In two parts. Part I. 3200 w. Schiffbau—July 24, 1912. No. 35512 D.

The Development of the Holland Submarine-Boat. Illustrated review of the development of submarines. Plate. 7500 w. Engng—Nov. 17, 1911. No. 28855 A.

The Submarine "Holland" (Les navires sous-marins "Holland"). M. Gouriet. History of development, and detailed description. Ills. 4000 w. Génie Civil—Dec. 16, 1911. No. 29792 D.

Results Obtained by the French Navy in Submarine Navigation. Translated from the (Chilian) *Revista de Marina*. An account of manœuvres and statement of conclusions. 3000 w. Jour Roy U Serv Inst—Dec., 1911. No. 29971 D.

The Use of Electricity in Submarines (L'application de l'électricité aux bateaux sous-marins). A. Bezzi. Report presented to the International Congress of Applied Electricity. Serial. 1st part. 2400 w. L'Éleccricien—April 13, 1912. No. 32765 D.

The Use of Electricity in Submarines (Die Anwendung der Elektrizität auf Unterseebooten). Herr Arnold. A critical review on submarine power as discussed by A. Bezzi. Serial. 1st part. 4000 w. Schiffbau—June 12, 1912. No. 34532 D.

An Auxiliary for Submarine Service. Illustrated description of a testing dock for submarine vessels recently launched at Spezia. 1500 w. Engr, Lond—Sept. 27, 1912. No. 36737 A.

Submarine Mines

Automatic Submarine Mines. Explains conditions to be fulfilled and gives illustrated detailed description of Elia's automatic submarine mines (Vickers-Brequet system). Plate. 7500 w. Engng—April 19, 1912. Serial. 1st part. No. 32468 A.

Submersibles

The Laurenti Submersible Boat "Hvalen" for the Swedish Navy. Photographs and description of this boat, of especial interest because of placing of orders for the British and Brazilian Navies and the propulsion by F. I. A. T. oil engines. 700 w. Engng—Jan. 19, 1912. No. 30176 A.

Submersible Boat for the Dutch Navy. Illustrates and describes a new type. 600 w. Engng—Jan. 5, 1912. No. 29679 A.

Suction

The Hawke-Olympic Collision. Percy A. Hislam. Illustrates and describes the investigation made by towing models of the two ships in a towing tank to determine the effects of vessels upon each other when steaming on parallel courses in close proximity. 1500 w. Sci Am Sup—Feb. 24, 1912. No. 30740.

Suction Between Vessels. A. H. Gibson and J. Hannay Thompson. Read before the British Assn. Describes experiments carried out in the Firth of Tay to obtain information as to the magnitude and range of action of the forces involved in the case of "suction" between passing vessels. 2000 w. Engr, Lond—Sept. 20, 1912. No. 36503 A.

The Suction of Vessels. Discusses the interaction of passing vessels, referring to experiments made with models, and considering reasons for the Hawke-Olympic disaster. Also editorial. 4000 w. Engr, Lond—Dec. 22, 1911. No. 29474 A.

Taffrail Logs

The Effect of Waves Upon a Taffrail Log. Harold A. Everett. A report of experimental investigations. Plates. 2000 w. Soc of Nav Archts & Marine Engrs, No. 7—Nov., 1911. No. 28170 N.

Tank Vessels

The Arrangement and Construction of Oil Vessels. J. Montgomerie. Illustrated description of a type of tank ship for carrying petroleum. 5000 w. Cassier's Mag—Dec., 1911. No. 28713 B.

New Tank Steamer for the Gulf Refining Company. Information concerning a new steamer to be known as the Gulfoil. Ills. 1500 w. Int Marine Engng—March, 1912. No. 30999 C.

A Diesel Motor Tank Vessel. Dr. Alfred Gradenwitz. Drawings and description of a longitudinally framed, Diesel engine tank vessel of 15,000 tons carrying capacity. 800 w. Int Marine Engng—Sept., 1912. No. 35683 C.

Terminals

Plans for a New Steamship Terminal in New York Harbor. H. McL. Harding. States the conditions and requirements, and describes the proposed Montgomery Terminal on the mainland of New Jersey. Plan. 3000 w. Int Marine Engng—Sept., 1912. No. 35684 C.

The Montgomery Terminal for Ocean Steamships, on the New Jersey Mainland, Port of New York. H. McL. Harding. Also editorial. Map, plan, and description of this port to be located on the New Jersey mainland, with the conveniences of New York Harbor. 2800 w. Eng News—Sept. 12, 1912. No. 35928.

"Titanic"

Sea-Borne Traffic and the Titanic Disaster. Richmond Pearson Hobson. A measure of actual dangers and effective remedies which may readily be applied. 6000 w. Engineering Magazine—June, 1912. No. 33125 B.

The Wreck of the "Titanic": Its Effect on Transatlantic Steamship Routes. Also editorial. Map. 4000 w. Eng News—April 25, 1912. No. 32371.

Wreck of the White Star Liner "Titanic." An illustrated account of the loss of this great steamship. 2500 w. Sci Am—April 27, 1912. No. 32332.

The Story of the "Titanic" Wireless. The story as told by Harold Bride, the assistant operator, with editorial note. 2000 w. Elec Rev & W Electn—April 27, 1912. No. 32403.

Foundering of the Titanic. An account of the disaster with drawings of the ship. 1500 w. Int Marine Engng—May, 1912. No. 32599 C.

The Loss of the Titanic. Prof. J. H. Biles. Also editorial. Discusses the disposition of bulkheads and the effect on safety. Ills. 5000 w. Engr, Lond—April 19, 1912. No. 32465 A.

The "Titanic" Disaster. Editorial on the disaster of April 15. 2200 w. Engng—April 15, 1912. No. 32471 A.

Lessons of the "Titanic" Disaster. Henry Harrison Suplee. Discusses methods for increasing safety at sea. 2500 w. Cassier's Mag—May, 1912. No. 33030 B.

The Structure of the "Titanic." Gives drawings showing the sectional elevation, deck plans, and cross-section of this steamer, with particulars. Plate. 2500 w. Eng News—May 9, 1912. No. 32683.

Safety in Travel by Sea. Editorial critical review of the report of the U. S. Senate Committee which investigated the "Titanic" disaster. 3500 w. Eng News—June 6, 1912. No. 33494.

The "Titanic" Inquiry. A record of the evidence given on naval architectural and engineering questions. Plates. 1500 w. Engng—June 14, 1912. Serial. 1st part. No. 33940 A.

The "Titanic" Disaster: Its Lessons, and the Danger of Icebergs (La Catastrophe du "Titanic," ses enseignements, et le danger des icebergs). A. Deslisle. A review of opinion on either side of the Atlantic. Ills. 4000 w. Génie Civil—June 8, 1912. No. 34008 D.

The "Titanic" Inquiry. Reprints portions of Lord Mersey's conclusions of interest to engineers and shipbuilders. Also editorial. 13500 w. Engng—Aug. 2, 1912. No. 35199 A.

Investigation into Loss of S. S. Titanic. A reprint, in English, of the complete findings by the Senate Committee on Commerce in regard to the Titanic disaster. 7200 w. Schiffbau—July 24, 1912. No. 35514 D.

Report on the Loss of the "Titanic" (S. S.) Annex to the Report. Includes the 26 questions formulated by the British Board of Trade; detailed description of the vessel; the trip, collision and observed damage; ice warnings; wireless service; and the recommendations of the Mersey commission. 25,000 w. Schiffbau—Aug. 28, 1912. No. 36127 D.

See also Sea Safety, under MARINE AND NAVAL ENGINEERING, and Hudson Bay Project, under RAILWAY ENGINEERING, *New Projects.*

Tonnage

The Tonnage Laws. Arthur R. Liddell. Considers the objections to the present system of assessment of dues by tonnage. 1000 w. Engr, Lond—July 12, 1912. No. 34722 A.

Torpedo Boats

The Danish Torpedo-Boat "Soridderen." Plate and brief description. 700 w. Engng—Jan. 26, 1912. No. 30318 A.

The Torpedo Cruisers "Catamarca" and "Jujuy" of the Argentine Marine (Die Torpedokreuzer "Catamarca" und "Jujuy" der argentinischen Marine). Herr Züblin. Description of these cruisers with results of trials. Ills. and plates. Serial. 1st part. 1600 w. Schiffbau—June 12, 1912. No. 34531 D.

Turbine Torpedo-Boat Propellers in the United States (I cacciatorpediniere a turbina della marina degli Stati Uniti d'America). G. Belluzzo. Describes the various types in use. Ills. Serial. 1st part. 8300 w. Industria—Sept. 8, 1912. No. 36215 D.

See also Destroyers, under MARINE AND NAVAL ENGINEERING.

Torpedo Control

A New Form of Underwater Attack. Robert G. Skerrett. Illustrated description of the Davis gun-torpedo and report of tests. 2000 w. Sci Am—Aug. 3, 1912. No. 35025.

The Wirelessly Directed Torpedo. Benjamin F. Missner. Illustrated account of some new experiments in this field. 1000 w. Sci Am—July 20, 1912. No. 34652.

Long-Range Torpedo Firing (Sul Lancio di Siluro a grandi Distanza). Federico Castracane. Discusses the difficulties attending accuracy in torpedo discharging. 14400 w. Rivista Marittima—June, 1912. No. 36209 E + F.

Towage

Chain and Rope Towage on German Rivers. K. Dietze. Describes the towing installation and gives formula for determining the degree of efficiency necessary for a chain-towing vessel, and related information. Ills. 7000 w. Int Marine Engng—Nov., 1911. Serial. 1st part. No. 27603 C.

Transporter Ship

The Transporter Ship "Kanguroo" for Submersible Boats. Illustrates and describes a vessel built for the transport of submarine boats, and also used to carry bulky loads. 700 w. Engng—July 19, 1912. No. 34894 A.

Vessel for Transporting Submarines. Illustrated description of the submarine transporting ship Kanguroo. 500 w. Engr, Lond—June 7, 1912. No. 33794 A.

The "Kanguroo"; A Ship for Transporting Submarines (Le "Kanguroo," navire pour le transport des sous-marins). Marcel Hegelbacher. Plans and description of this novel transport ship, one end of which can be opened to allow the entrance and docking of submarines within its interior. Ills. 1600 w. Genie Civil—July 27, 1912. No. 35585 D.

Turbines

The Marine Steam Turbine. Sir Charles A. Parsons. Illustrates and describes the latest turbine developments. 1500 w. Cassier's Mag—Dec., 1911. No. 28710 B.

Parsons' Steam Turbines for an 18-Knot Ocean Liner. Illustrated detailed description of turbines designed to develop 16500 shaft h. p. when running 290 revolutions per minute, and to give the boat a speed of 18 knots. 2 plates. 3000 w. Engng—March 22, 1912. No. 31730 A.

The Parsons Marine Steam Turbine and Its Application to Various Classes of Vessels. E. H. B. Anderson. Considers arrangements of turbine machinery in past and present vessels fitted with Parsons turbines. Plates. 3500 w. Soc of Nav Archts & Marine Engrs, No. 10—Nov., 1911. No. 28173 N.

The Best Arrangement for Combined Reciprocating and Turbine Engines on Steamships. George W. Dickie. Explains a proposed arrangement approved by the author. Plate. 4000 w. Soc of Nav Archts & Marine Engrs, No. 9—Nov., 1911. No. 28172 N.

Note on the Performance of Marine Turbines at Reduced Speed. E. Buckingham. 4500 w. Jour Am Soc of Nav Engrs—Feb., 1912. No. 31493 H.

Curtis Marine Steam Turbines. Illustrates and describes details of the designs. 2000 w. Mech Engr—April 12, 1912. No. 32265 A.

Steam Turbines of 4,500 to 5,600 Horsepower (La Turbina a Vapore di 4,500-5,600 H. P.). A general description of the Tosi turbine. Plates. 1200 w. Industria—Mar. 30, 1912. No. 32311 D.

The "Tosi" Marine Steam Turbine (La Turbina a Vapore "Tosi" Marina). Francesco Modugno. Description and applications of this turbine on Italian vessels. Ills. 9000 w. Rivista Marittima—Feb., 1912. No. 32302 E + F.

The Tosi Steam-Turbines. Illustrates and describes turbines recently constructed for ship propulsion and for the driving of electric generators. Plate. 3500 w. Engng—April 26, 1912. No. 32843 A.

Turbine, Stopping and Reversing (Stoppwag, Stoppzeit und Rückwärtsturbine). Herr Weitbrecht. Calculations on the strain in marine turbines, in stopping due to the resistance of the ship and propellers. Diagrams. 2000 w. Schiffbau—Feb. 14, 1912. No. 31311 D.

See also same heading under MECHANICAL ENGINEERING, *Steam Engineering.*

Turbine Steamers

Experience on the Trial Trip of a Turbine-Driven Naval Vessel. J. E. Snyder. Report of the recent standardization and endurance trials of the U. S. naval collier "Neptune." 2500 w. Elec Jour—June, 1912. No. 34038.

The Strauraer and Larne Turbine Steamer "Princess Victoria." Illustrated description of vessel and equipment, with review of recent rapid progress in the Channel type of steamers. Plate. 2200 w. Engng—Sept. 27, 1912. No. 36728 A.

The Geared Turbine Channel Steamers "Normannia" and "Hautonia." J. H. Biles. Read before the Inst. of Nav. Archts. Describes the completed ship and gives the history of the design and results of trials. 2000 w. Engng—April 12, 1912. No. 32280 A.

Turret Ships

The Jubilee of the Turret-Ship. Percival A. Hislam. Reviews the progress of the turret-ship during fifty years. Ills. 1800 w. Sci Am—Feb. 17, 1912. No. 30440.

Tugs

Light Draft Tug Maria Hendrika III. D. Kooijman. Illustrated description of a steam tug designed for light draft river and harbor work, and with sufficient sea-going qualities to do some towing at sea. 3500 w. Int Marine Engng—Nov., 1911. No. 27605 C.

U. S. Navy

Naval Personnel and Its Development. U. T. Holmes. Urges changes in the system now followed and presents a plea for unity with specialization. 6500 w. Engineering Magazine—Dec., 1911. No. 28387 B.

The United States Navy Department and "Engineering." Editorial on a recent report of the U. S. Joint Army and Navy Powder Board. 3000 w. Engng—April 26, 1912. No. 32845 A.

The Fleet and Its Readiness for Service. Richard Wainwright. Discusses the requirements of the fleet and explains the necessity of naval preparedness. Ills. 2500 w. Sci Am—Dec. 9, 1911. No. 28688.

Propulsive Machinery and Oil Fuel in the United States Naval Service. C. W. Dyson. Reviews recent improvements in the naval service, and gives valuable information relating to naval engineering development. General discussion by Rear Admiral Melville and others. Ills. 14000 w. Pro Engrs Club of Phila—April, 1912. No. 33117 D.

Ventilation

Ventilation of Passenger Ships. Anderson MacPhee. Illustrated description of a system designed to be used either as a plenum system when heating, or an exhaust system when no heat is required. 1500 w. Int Marine Engng—Dec., 1911. No. 28611 C.

A Motor-Driven Blower Unit for Shipboard Use. Frank E. Fisher. Explains the requirements, illustrates and describes the motor-driven blower, and reports the test. 3000 w. Elec Rev & W Elect'n—Sept. 21, 1912. No. 36228.

Vibration

Vibration in Steam Boats; Causes and Prevention (Les Vibrations dans les navires a vapeur leur causes, comment les éviter). L. Robida. Describes recent practice in prevention. 2400 w. Yacht—Dec. 30, 1911. No. 29800 D.

Wind-Resistance

Wind-Resistance on Ocean Vessels (Der Wind-widerstand bei Seeschiffen). Dr. Schieneich. Diagrams and discussions showing the assistance or resistance given to ocean-going vessels by the wind. 5200 w. Schiffbau—Nov. 22, 1911. No. 28809 D.

Yachts

Atair, a Twin-Screw Diesel Yacht. J. Rendell Wilson. Illustrated description of a pleasure boat built for Mr. Leloir, of Buenos Aires, driven by a Diesel engine. 1500 w. Rudder—June, 1912. No. 33424 C.

Aerial Flight. Henry Reginald Arnulph Mallock. James Forrest. Lecture delivered at the Inst. of Civ. Engrs., April 19, 1912. An examination of the principles involved and of the present condition of the art. 4500 w. Engng—April 26, 1912. No. 32846 A.

Notes on Aviation. W. I. Chambers. Discusses safety in flight. Ills. 7500 w. Pro U S Naval Inst—June, 1912. No. 33979 E.

Motor Flight and Air Sailing or Gliding. Carl von Lilienbach. Abridged translation from *Fachzeitung für Flugtechnik*. Considers the ideal to be a machine capable of both kinds of flight. 2500 w. Sci Am Sup—June 8, 1912. No. 33473.

Ballooning

An Outline of the Theory of Ballooning. Samuel Reber. A discussion of the principles involved. 5000 w. Jour Fr Inst—Oct., 1912. No. 37104 D.

Biplanes

The Wright Biplane, Model "B." Illustrated historical sketch of its development. 2500 w. Sci Am Sup—Dec. 9, 1911. No. 28693.

The Boland Tail-less Biplane. Illustrated description of an original American aeroplane. 1200 w. March 23, 1912. No. 31430.

Bracing

Stresses in Aeroplane Stays. Condensed paper by Captain Largier, before Inst. of Civ. Engrs. of France, on "The Torsion Meter," showing how stay stresses may be measured on an aeroplane in actual flight. 1700 w. Engr, Lond—April 12, 1912. No. 32286 A.

Wire and Wire Rope on Aeroplanes. H. A. Whitney. Gives useful hints for the flying machine constructor. Ills. 3500 w. Sci Am Sup—Dec. 2, 1911. No. 28517.

The Tension-Meter (Le Tension-Mètre). Captain Largier. A device for use especially in aeroplane construction for determining the tension in the wire bracing. Ills. 5600 w. Mem Soc Ing Civ de France—Dec., 1911. No. 31387 G.

Charts

Charts for Aviators (Karten im Flugzeug). Hans Steffen. Describes some French topographic charts specially prepared and marked for the use of aviators. Plate. 2800 w. Motorwagen—May 10, 1912. No. 33558 D.

Chassis

Aeroplane Under-Carriages. From a paper by G. de Haviland, at the Inst. of Auto. Engrs. Shows the need of improvements, states the requirements, and discusses features. 1500 w. Engng—March 15, 1912. No. 31529 A.

Wheel Chassis (Fahrgestelle). Ernst Heinkel. Describes elastic construction necessary in aeroplanes to prevent stresses from running over uneven ground. Ills. Serial. 1st part. 3500 w. Motorwagen—Sept. 20, 1912. No. 36638 D.

Control

The Control of Aeroplanes. Herbert Chatley. Read at the Dundee meeting of the British Assn. A study of longitudinal, lateral, and directional control. 2500 w. Engng—Sept. 27, 1912. No. 36733 A.

The Efficiency of Control Systems in Flying Machines. Abstract of a paper by Albert A. Merrill read at the Boston meeting. Discusses the three important points. 1200 w. Jour Am Soc of Mech Engrs—May, 1912. No. 33214 D.

Design

Aeroplane Construction as Shown at the Paris Aero Salon. Horace B. Wild. Illustrates and describes mechanical and structural features of the latest air craft. 6000 w. Engineering Magazine—June, 1912. No. 33132 B.

The Parabola in Aeroplane Surfaces. G. H. Godley. Gives hints for drawing parabolic curves of any desired type. 1200 w. Sci Am Sup—Nov. 25, 1911. No. 28283.

The Distribution of Pressure on Inclined Aerocurves. A. P. Thurston. Read before the British Assn. Explains the method of making the experiments and the results. 1200 w. Engng—Sept. 20, 1912. No. 36497 A.

The theory of the Glider Design. C. H. Wetzel. First of a series of articles dealing with aviation at Cornell University. 800 w. Sib Jour of Engng—Oct., 1912. Serial. 1st part. No. 37034 C.

The Structures of the Future in Relation to Aviation. Horace Cubitt. Read before the Inst. of Munic. Engrs., London. Discusses the construction of the workshops and housing sheds for aeroplanes. 3500 w. Archt, Lond—June 14, 1912. No. 33915 A.

I. The Structures of the Future in Relation to Aviation. Horace Cubitt. II. Some Suggestions for By-Laws and Regulations in Relation to Aviation. B. Wyand. Two papers before the Inst. of Munic. Engrs., discussed together. 10000 w. Surveyor—June 21, 1912. No. 34215 A.

Design of Racing Aeroplanes. Stanley Yale Beach. Drawings and description of fast monoplanes, with designs for an international cup defender. 1500 w. Sci Am—May 4, 1912. No. 32577.

Some New German Aeroplanes and Motors (Einige neuere deutsche Flugzeuge und Flugmotoren). Franz Klee. Description of some of the leading German types. Ills. and plate. 1800 w. Motorwagen—April 10, 1912. No. 32730 D.

Recent Developments in Air Ships, Aeroplanes, and Motors in France (Die neuere Entwicklung der Luftschiffe, Flugmaschinen und Luftfahrzeug-motoren in Frankreich). F. Bendemann. Illustrated review of the latest tendencies in design as brought forth in the Paris Exhibition. Serial. 1st part. 6000 w. Zeitschr des Ver deutscher Ing—April 20, 1912. No. 32721 D.

Dirigibles

Zeppelin's Schwaben. Carl Dienstbach. Brief illustrated description of this high-speed airship for passenger service. 1800 w. Sci Am—Nov. 25, 1911. No. 28270.

The Siemens-Schuckert Dirigible and its Hangar (Das Luftschiff der Siemens-Schuckert-Werke und seine Halle). O. Krell. Description of the dirigible, the plant, and shed. Illus. and Plates. 2000 w. Elek. Kraft u Bahnen—Nov. 24, 1911. No. 28834 D.

Exposition

The Turin Aeronautical Congress (Le Ve. Congrès International d'Aéronautique). R. Chassériand. Brief review of papers on stability, resistance, and meteorology. 2400 w. Génie Civil—Nov. 18, 1911. No. 28863 D.

The Third Aviation Salon at Paris. Stanley Yale Beach. Illustrates and describes interesting aeroplanes and constructional details shown. 1500 w. Sci Am—Jan. 20, 1912. No. 29840.

Aeronautic Exhibits (Le Salon de l'Aéronautique). L. Bresch. Pictorial review of the aviation exposition in Paris. 2800 w. La Nature—Dec. 30, 1911. No. 29799 D.

Aeroplanes at the 1911 Exposition (Les Aéroplanes au Salon de 1911). L. Marchis. Description of the various types and their performances. Ills. Serial. 1st part. 5000 w. Tech Mod—Dec., 1911. No. 29777 D.

The Third International Exposition for Aerial Locomotion (La IIIe Exposition Internationale de Locomotion Aerienne). G. Espitallier. Review of the exposition and brief account of the various exhibits. Ills. 5600 w. Génie Civil—Dec. 23, 1911. No. 29795 D.

The Third Aeroplane Show at Paris (Die Flugzeuge im dritten Pariser Salon). L. Szkolnik. Description of the exhibition with diagrams of some of the leading features presented. Ills. Serial. 1st part. 1500 w. Motorwagen—Jan. 31, 1912. No. 30534 D.

The Third Paris "Salon d'Aéronautique" (Die III Pariser "Salon d'Aéronautique"). Dr. V. Quittner. Review of some types on exhibit. Ills. 2000 w. Zeit d Oest Ing u Arch Ver—Mar. 22, 1912. No. 32054 D.

The New York Aero Show. Stanley Yale Beach. Illustrates some novel American aeroplanes exhibited. 2500 w. Sci Am—May 25, 1912. No. 33045.

The General Air-Craft Exhibition in Berlin, April 3-14, 1912 (Allgemeine Luftfahrzeug-Austellung, Berlin 3-14. April, 1912). Description of some of the leading dirigibles and aeroplanes exhibited. Serial. 1st part. 2700 w. Motorwagen—April 10, 1912. No. 32728 D.

Hydrogen

The Preparation of Hydrogen for the Use of Military Aeronautics (La Préparation de l'Hydrogène pour les Besoins de l'Aéronautique Militaire). C. Matignon. A presentation of the various methods of preparation for the use of dirigibles, etc. Ills. 6000 w. Technique Moderne (Supplément) — Feb. 15, 1912. No. 31396 D.

The Manufacture of Hydrogen for Aeronautical Purposes (L'industria dell'idrogeno per aeronautica). G. Gallo. Reviews methods of hydrogen generation on large scales for balloonists. Ills. 1700 w. Ann d Soc d Ing e d Arch Ital—Sept. 16, 1912. No. 36687 E.

Hydroplanes

The Strength of an Aeroplane. An account of tests made by Mr. Curtiss, with illustrated description of a new type of hydro-aeroplane developed by Mr. Curtiss. 1700 w. Sci Am—Dec. 16, 1911. No. 28975.

The Hydro-Aeroplane. Illustrates and describes some of the latest biplanes which have been fitted with floats in order to make soaring from the water possible. 800 w. Sci Am—Dec. 2, 1911. No. 28514.

Military

The Aeroplane as an Aid to the Solution of Existing Strategical Problems. C. J. Burke. Considers how the aeroplane affects the views on strategy now held by military schools in Europe. Discussion. 8000 w. Jour Roy U Serv Inst—Dec., 1911. No. 29972 D.

Naval and Military Aviation. Summary of a memorandum issued by the British War Office, presenting features of interest to engineers. 1800 w. Engr, Lond—April 19, 1912. No. 32463 A.

Grenadiers of the Air. H. Bannerman-Phillips. An illustrated discussion of what may be expected by this military use of airships and aeroplanes. 3500 w. Sci Am—Sept. 14, 1912. No. 35914.

The War Office Aeroplane Competition. Illustrated review of the aeroplanes entered. 3000 w. Engng—Aug. 9, 1912. No. 35301 A.

British Military Aeroplanes (Der britische Militär-Aeroplan). Rudolf Kommer. Reviews the requirements adopted by the Government for the various service types. 2000 w. Motorwagen—Mar. 10, 1912. No. 32059 D.

Military Aeroplanes. List of prizes offered by the War Office, with specifications of the requirements, and editorial. 2500 w. Engng—Dec. 22, 1911. No. 29472 A.

Military Aviation (Aviacion Militar). F. Cervantes. A brief résumé of the history of aviation especially in its application to military purposes, from the early scout balloons to the modern aeroplane. Ills. 2500 w. Boletin de Ingenieros, Mex.—Jan. 16, 1912. No. 30645 N.

The Military Aviation Meet at Reims (Le concours d'appareils militaires d'aviation, Reims). G. Espitallier. Description of meet, machines entered and results attained in October-November, 1911. Ills. Serial. 1st part. 6000 w. Génie Civil—Dec. 2, 1911. No. 29789 D.

Military Aeronautics in France. B. H. Barrington-Kennett. Information concerning the organization of the aeronautical service, types of aircraft, conditions, trials, etc. 3500 w. Jour Roy U Serv Inst—Feb., 1912. No. 31199 D.

The French Competition for Military Aeroplanes. Illustrations and brief description of some of the machines and tests they successfully fulfilled. 1000 w. Sci Am—Nov. 18, 1911. No. 28063.

Results of Military Aeroplane Tests in France. Illustrates and describes details of competing machines. 1200 w. Sci Am Sup—Nov. 25, 1911. No. 28285.

The Albatross Military Biplane, Model 1911 (Der Albatros-Militär-Doppeldecker, Type 1911). Franz Klee. Details in the design of this two-passenger type. Ills. and plates. 1200 w. Motorwagen—Apr. 14, 1912. No. 32316 D.

The Albatross Biplane, Military Type 1912 (Der Albatros-Doppeldecker, Militärtype, 1912). Franz Klee. Details of construction of this machine. Ills. and Plates. 1200 w. Motorwagen—Feb. 10, 1912. No. 31315 D.

Notes on Launching Projectiles from Aeroplanes (Considerations sur le lancement des projectiles par les aeroplanes). J. Olive. Studies on the trajectile path from moving planes. Ills. 4500 w. Génie Civil—Jan. 13, 1912. No. 30616 D.

Monoplanes

The Stresses on Monoplane Wings. Examines a calculation given by Mr. Blackburn, in *Flight*, and endeavors to calculate the probable maximum stresses. 1800 w. Engng—Jan. 12, 1912. No. 29910 A.

The R. E. P. Monoplane. John Jay Ide. Illustrates and describes the latest model, with all-steel body. 1200 w. Sci Am Sup—Nov. 11, 1911. No. 27793.

The Deperdussin Monoplane. John Jay Ide. Illustrates and describes models designed by Adolf Deperdussin. 1000 w. Sci Am Sup—Dec. 2, 1911. No. 28516.

The Aviatik Monoplane (Der Aviatik-Eindecker). Leopold Szkolnik. Brief description of this make. Ills. and plates. 1000 w. Der Motorwagen—April 10, 1912. No. 32729 D.

The "Mars" Monoplane (Der Mars-Eindecker). Fritz Listemann. Brief description with photos and diagrams of this type. 1100 w. Motorwagen—Aug. 10, 1912. No. 36157 D.

Motor Design

The Engineer's Responsibility for the Air Craft of the Future. Horace B. Wild. A critical study of the mechanical and structural details of the latest aeroplane motors. Ills. Serial. Part 1. 5500 w. Engineering Magazine—April, 1912. No. 31552 B.

The Alexander Prize for Aeroplane Engines. Brief report of the engines tried. 1500 w. Engng—April 19, 1912. No. 32472 A.

Singular Aviation Motors (Les Moteurs d'Aviation Singuliers). Henri Petit. Illustrating some of the peculiar features of modern motor designs. Ills. Serial. 1st part. 1800 w. La Nature—Feb. 10, 1912. No. 31386 D.

Results and Significations from Tests on Aviation Motors (Résultats et Interprétation d'Essais de Moteurs d'Aviation). M. G. Lumet. Conditions for the adaptation of motors for use on aeroplanes. Ills. 7000 w. Mem Soc Ing Civ de France—Jan., 1912. No. 32082 G.

Motors

Recent Aeroplane Engines. Reviews recent advance in Great Britain in the manufacture and use of the most suitable apparatus for flying. 1700 w. Prac Engr—Dec. 1, 1911. Serial. 1st part. No. 28757 A.

American Aeronautic Motors. Stanley Yale Beach. Illustrates and describes some of the new aviation engines made in the United States. 2000 w. Sci Am Sup—May 18, 1912. No. 32949.

American Aeronautic Motors. Stanley Yale Beach. Illustrated description of a new rotary motor and a six-cylinder engine with concentric valves. 1500 w. Sci Am Sup—June 1, 1912. No. 33286.

The Sturtevant Aeronautical Motor. Chester L. Lucas. Remarks on types and performances of various makes, and gives illustrated detailed description of motor named. 3000 w. Mach, N Y—Aug., 1912. No. 34928 C.

The Gnome Rotary Engine. Earle L. Ovington. Illustrated detailed description, explaining its advantages and disadvantages as an aeronautic motor. 2500 w. Sci Am—Sept. 14, 1912. No. 35916.

New Aeroplane Motors at the Paris Show. Illustrates and describes the principal types exhibited. 1500 w. Sci Am Sup—Feb. 3, 1912. No. 30209.

Navy

Aviation in the Navy. E. Lapointe. Discusses the governing principles of flying machines and the advantages to be expected from aviation in the Navy. 11000 w. Pro U S Naval Inst—June, 1912. No. 33977 E.

Aircraft for Sea Service. F. L. M. Boothby. Discusses airships and aeroplanes, the service for which each is suited, future aircraft and related subjects. General discussion. 16000 w. Jour Roy U Serv Inst—June, 1912. No. 34190 N.

Power

The Power Necessary to Drive an Aeroplane. Sydney V. James. From *The Armour Engr.* Gives a method for its numerical computation. Diagrams. 1200 w. Sci Am Sup—Nov. 4, 1911. No. 27661.

Propellers

The Design of Model Propellers and Elastic Motors. E. A. Vessey. Describes experiments made with a view to finding the laws governing the twisting and untwisting of elastic skeins, in connection with propeller design. 5000 w. Sci Am Sup—March 30, 1912. No. 31650.

Torque in Aeroplane Propellers. Dr. A. F. Zahm. Explains the theory and discusses practice. 2000 w. Sci Am Sup—March 2, 1912. No. 30928.

Experiments with Air Propellers (Untersuchung einer Luftschraube). H. Scheit and Bobeth. Trials and tests made in the construction of propellers. Diagrams. 3800 w. Zeit des Ver Deutscher Ing—Nov. 4, 1911. No. 28810 D.

Screw Propellors (L'Hélice Propulsive). Rodolphe Soreau. An article of length dealing with their applications and principles in connection with aeroplanes and aerial craft. Diagrams. 220 pages. Mem d l Soc d Ing Civ de France—Sept., 1911. No. 28888 G.

The Cyrnos Rotating Wings (L'aile rotative Cyrnos). E. Friedheim. Describes the theory and design of these novel propellers. Ills. 2500 w. Rev Industrielle—Jan. 20, 1912. No. 30629 D.

Driving Blades (Die Triebschraube). R. Soreau. Mathematical discussion on the theoretic design of aeroplane propellers. Diagrams. Serial. 1st part. 2000 w. Die Turbine—Mar. 20, 1912. No. 32002 D.

Sheds

The Hangar for Military Dirigibles at Belfort (Le Hangar a Dirigeables militaires de Belfort). R. Maignial. Shed in course of construction, 100 metres long, 24 m. high and 29 m. wide. Arch type of roof. Ills. 2500 w. Génie Civil—Nov. 4, 1911. No. 28856 D.

Stability

Approximate Stability. Arthur R. Liddell. Gives tables for approximate curves of levers and methods of applying them. 2000 w. Engr, Lond—Dec. 15, 1911. No. 29189 A.

Graphic and Experimental Studies on the Stability of Aeroplanes in Calm and Rough Weather (Étude graphique et expérimentale de la stabilité de l'aéroplane en air calme et en air agité). A. Delaunay. The first part discusses longitudinal stability under the two conditions. Diagrams. Serial. 1st part. 2500 w. Tech Mod—June 1, 1912. No. 34004 D.

Automatic Stabilization of the Aeroplane (La Stabilisation Automatique Longitudinale des Aéroplanes). Ad. Doutre. A study of the three forces which tend to equilibrate the aeroplane. Ills. 4600 w. Tech Mod—Oct., 1911. No. 28428 E.

The Doutre Stabilizer. Illustrated account of a promising design for automatic aeroplane control. 1000 w. Sci Am Sup—Nov. 4, 1911. No. 27662.

The Action of the Horizontal Planes of the Aeroplane (Le Mécanisme de l'Action des Empennages Horizontaux des Aéroplanes). G. de Bothézat. Discussion bearing on the amount of upward tipping of the wings of the aeroplane for stability. 3600 w. Rev de Mécanique—Oct., 1911. No. 28499 E + F.

Wilbur Wright

Wilbur Wright. Obituary, reviewing his life-work in the field of aviation. 2000 w. Engr, Lond—June 7, 1912. No. 33795 A.

Wind Velocity

See same title, under ELECTRICAL ENGINEERING, *Measurement*.

AUTOMOBILES

Abbott-Detroit

Two 1913 Abbott Detroits. Illustrated detailed description of two models, 44-50 and 34-40. 2000 w. Automobile—Aug. 1, 1912. No. 35007.

Aberdonia

The 18-20 H. P. Aberdonia Chassis. Illustrates and describes details of interest. 2500 w. Auto Jour—Aug. 31, 1912. No. 35866 A.

The 16-20 h.p. Aberdonia Car. Illustrated description of a recently introduced four-cylinder car. 1000 w. Autocar—Dec. 30, 1911. No. 29605 A.

The Aberdonia Car. Illustrates features of interest in the chassis. 500 w. Auto Jour—Oct. 28, 1911. No. 27669 A.

Accessories

A Fertile Field for Inventors. Illustrates and describes many new accessories for the automobile. 2500 w. Sci Am—Jan. 6, 1912. No. 29357.

Garden Accessory Show an Exhibition in Itself. Remarks on exhibits, including non-skid tires, electric lighting systems, wire wheels, etc. Ills. 2000 w. Automobile—Jan. 11, 1912. (Special.) No. 29584 C.

Acceleration

The Acceleration of a Motor Car. H. E. Wimperis. Gives a simple method of predicting the acceleration of a motor car, and shows how this acceleration can be experimentally measured. 1800 w. Engr, Lond—Sept. 27, 1912. No. 36738 A.

Accounting

Central-Station Electric Vehicles Accounting. Hermann Spoehrer. Read before the Nat. Elec. Lgt. Assn. Outlines a system of accounts for the electric automobile department. 2500 w. Com Veh—Nov., 1911. No. 27746 C.

Adams

16-Horse-Power 4-Cylinder Motor Car with Self-Starter. Illustrated detailed description of a new car constructed by the Adams Mfg. Co., Ltd. 2000 w. Engng Aug. 23, 1912. No. 35755 A.

Adler

The 15 h.p. Adler. Illustrated description of this latest addition to the Adler cars. 1200 w. Autocar—July 20, 1912. No. 34595 A.

Agricultural

The Agricultural Motor Contest at Chelles. Lucien Fournier and L. W. Ellis. A comparison of European and American machines. Ills. 4000 w. Sci Am Sup—June 29, 1912. No. 33990.

See also Motor Plows, under *Automobiles.*

Air Propelled

The Air-Propelled Car. G. E. Bradshaw. Illustrated description of car with air-propeller in place of clutch, gear box, and differential, discussing its efficiency, adaptability and advantages. 2000 w. Autocar—Aug. 3, 1912. No. 35187 A.

The Air-Propelled Car. Criticisms and comments on the article by G. E. Bradshaw, published Aug. 3. 2200 w. Autocar—Aug. 17, 1912. No. 35456 A.

Ambulances

Removable Linings for Ambulance Bodies. Walter S. Goodale. Illustrates and describes construction applicable to the handling of patients with contagious diseases. 1800 w. Com Veh—Dec., 1911. No. 28631 C.

Atlas

1913 Atlas Motor. Illustrates and describes the many improvements in the latest model of Knight double-sleeve engine. 3000 w. Automobile—July 25, 1912. No. 34785.

Austin

The New 10 h.p. Austin. Illustrated description of a new 4-cylinder car. 1000 w. Autocar—April 20, 1912. No. 32507 A.

The 10-H. P. Austin. Illustrates and describes this improved model. 700 w. Auto Jour—June 8, 1912. No. 33766 A.

Automobile Manufacture

See Shop Practice, under *Machine Works and Foundries.*

Auxiliary Equipment

Auxiliary Equipment of Motor Trucks. Harry W. Perry. Illustrates and describes developments in the utilization of the power plant of these vehicles for operating winches, capstans, etc. 4500 w. Com Veh—Nov., 1911. No. 27747 C.

Axles

Special Steel for Axles. A. P. Eres. Report of traction, endurance and micrographic tests made to determine the suitability of various steels for axles on high wheeled cars. Ills. 2000 w. Horseless Age—Jan. 10, 1912. No. 29579.

Making an Axle. Illustrates and describes construction details from the bar stock to the finished work. 3500 w. Automobile—May 23, 1912. No. 33063.

Ball-Bearings

Failure of Ball Bearings. J. V. Pugh. Read before the Inst. of Auto. Engrs. Critical discussion of G. F. Barrett's paper on "The Causes of Failure in Ball Bearings." Ills. 2200 w. Auto Jour—April 13, 1912. No. 32251 A.

See also same heading, under *Machine Elements and Design.*

Battery Charging

Efficient Charging of Electric Automobile Batteries. J. F. Lincoln. Read before the Elec. Veh. Assn. Discusses charging batteries in series, and outlines an ideal system, in the present article. Ills. 1500 w. Horseless Age—March 27, 1912. Serial. 1st part. No. 31626.

Battery Charging Equipments for Electric Vehicles. T. H. Schoepf. Discusses the battery charging problem of a particular garage as an example. 1000 w. Elec Jour—June, 1912. No. 34040.

Bearing Pressures

Automobile Engine Bearing Pressures. G. W. Lewis. Computes the maximum unit bearing pressures for wrist-pin, crank-pin, front, center, and rear bearings. Also average rubbing speeds. 1500 w. Am Mach—Nov. 9, 1911. No. 27774.

Bergdoll

Bergdoll Adds a Forty to Its Line. Illustrates and describes the latest car of this Philadelphia company. 3000 w. Automobile—Dec. 28, 1911. No. 29263.

Body Design

Current Practice in Body Design. F. E. Watts. Illustrates and describes new types. 2500 w. Horseless Age—Dec. 20, 1911. No. 28919.

Body Design and Construction. Brief illustrated description of a totally enclosed body with a detachable top of unique design. 300 w. Autocar—Aug. 31, 1912. No. 35865 A.

A New System of Body Building. Illustrates and describes an all-steel body with detachable upholstery for B. S. A. cars. 500 w. Autocar—Oct. 12, 1912. No. 36911 A.

Brakes

The Best Arrangement for Hand Brake Rods. Edward L. Martin. Diagrams and description of arrangement by which tightening or loosening of brakes can be avoided. 900 w. Horseless Age—Sept. 4, 1912. No. 35829.

Brasier

The 12 H. P. Brasier. Illustrates and describes the main features of interest in this car. 2000 w. Auto Jour—March 23, 1912. No. 31717 A.

The 11 h. p. Brasier. Illustrated description of this small French low-powered car. 1200 w. Autocar—Aug. 17, 1912. No. 35455 A.

Buchet

The 12-20 h. p. Buchet. Illustrated description of car with chain-driven distribution, three speeds, and other features of interest. 1200 w. Autocar—Aug. 3, 1912. No. 35185 A.

Cadillac

The 20-30 h.p. Cadillac. Illustrates and describes details of this 4-cylinder car. 1500 w. Autocar—July 6, 1912. No. 34455 A.

Cadillac Coupé Design. George J. Mercer. Drawings and description. 2500 w. Automobile—Oct. 24, 1912. No. 36988.

Cadillac for 1913. Illustrates and describes the new features of the latest model. 2500 w. Automobile—Aug. 22, 1912. No. 35416.

Calthorpe

The 15 h.p. Calthorpe. Illustrated detailed description of chassis, engine, etc. 800 w. Autocar—Feb. 10, 1912. No. 30656 A.

Cams

A Critical Analysis of Automobile Cams. H. Leland Lowe. Explains the development of a cam outline giving an harmonic motion to the valve, similar to the motion of an engine piston. 3000 w. Horseless Age—May 15, 1912. No. 32914.

See also same heading, under *Machine Elements and Design.*

Carburetors

Ware Carburettor. Brief illustrated description. 400 w. Engng—Dec. 1, 1911. No. 28780 A.

Review of the Carbureter Field. Illustrated review of improvements made during the past year. 5000 w. Automobile—Jan. 18, 1912. No. 29859.

The Manufacture of Carbureters. F. B. Hays. Deals with materials used, preparing the castings, machining them, assembling and testing. Ills. 2000 w. Am Mach—Jan. 4, 1912. No. 29350.

Some Tests on Carbureters. George W. Munro. Outlines the problem of carburation for motor vehicle engines and points out the difficulties met in determining the performance of a carbureter as distinct from the performance of the engine. 2500 w. Jour Am Soc of Mech Engrs—March, 1912. No. 31565 D.

The Stewart-Morris Paraffin Carburetor. Illustrated description, with report of tests. 1200 w. Auto Jour—Oct. 5, 1912. No. 36823 A.

Studies on Motor Engine Carburetors (Studie über die Vergaser von Motorfahrzeugen). A. Heller. General analysis of carburation with studies on most efficient mixtures. Ills. and diagrams. 8000 w. Zeitschr des Ver deutscher Ing—July 6, 1912. No. 34561 D.

An Indicator for Spray-Carburetors (Indikator für Einspritz-Vergaser). Georg Bergmann. Results of a series of tests on carburetor adjustment, with curves. Ills.

and plate. Serial. 1st part. 4000 w. Motorwagen—June 20, 1912. No. 34541 D.

The Thermal Conductivity of Carburizing Materials. J. H. Nead and J. N. Bourg. Report of an investigation made to determine the relative merits of different carburizing agents with respect to time lost in bringing the pots to the carburizing temperature. 1200 w. Horseless Age—Oct. 23, 1912. No. 36991.

Exhaust Gasses (Ueber Auspuffgase). Paul Suchy. Chemical analyses of the nature of exhaust gases, and resulting determinations of proper carburation. Serial. 1st part. 2800 w. Motorwagen—Sept. 10, 1912. No. 36637 D.

Car Overhauling

How to Place Your Car in Commission. Illustrated detailed directions for the proper overhauling of a car. 3000 w. Automobile—March 14, 1912. Serial. 1st part. No. 31172.

Chalmers

'13 Chalmers Out. Illustrates and describes features appearing in the new models. 2500 w. Automobile—July 25, 1912. No. 34786.

The 25-H. P. Chalmers Car. Illustrated description of details of interest in this moderately priced car. 1500 w. Auto Jour—May 18, 1912. No. 33258 A.

Charron

The 15 h. p. Charron Car. Illustrated detailed description. 800 w. Autocar—Dec. 16, 1911. No. 29214 A.

Chenard-Walcker

The 16-20-H. P. Chenard-Walcker Chassis. Illustrates and describes the latest model of these cars. 2000 w. Auto Jour—Aug. 17, 1912. No. 35454 A.

Clutch

The Polyrhoë Clutch. A simple metal cone clutch with a floating female cone carried on the clutch casing by a set of four disc-like pegs. Behind the female cone is a strong extra spring. Ills. 1500 w. Auto Jour—May 18, 1912. No. 33257 A.

Cole

New Cole Series Has Electric Starter. Illustrates and describes features of the 1913 models. 3000 w. Automobile—Sept. 19, 1912. No. 36030.

Commercial Vehicles

Special Commercial Vehicle Bodies. Morris A. Hall. Considers unusual requirements and illustrates and describes types. 1500 w. Com Veh—Dec., 1911. Serial. 1st part. No. 28630 C.

Increasing the Utility of Commercial Cars by Auxiliary Loading and Unloading Devices. Edward W. Curtis, Jr. Read before the Soc. of Auto. Engrs. Considers briefly the various devices in use. 2500 w. Horseless Age—Feb. 21, 1912. No. 30716.

Taking Care of the Freight Automobile. Illustrated article explaining how trucks are maintained to get the best service. 3500 w. Automobile—Feb. 15, 1912. No. 30451.

Motor Delivery in Gotham's Big Stores. Illustrated analysis of the automobile service systems in use in Gimbel Brothers' and the Greenhut-Siegel-Cooper establishments in New York City, N. Y. 4000 w. Automobile—March 21, 1912. No. 31461.

Commercial Motor Delivery, Cost and Results. L. R. Dutton. Read before the Am. Gas Inst. Shows the growth of the motor industry and its relation to transportation, giving some costs of operation, etc. 9000 w. Pro Age—Nov. 15, 1911. No. 28051.

See Electric Trucks and Motor Trucks, under *Automobiles;* and Automobiles, under CIVIL ENGINEERING, *Municipal.*

Construction

Without Prejudice. Constructive criticisms, mainly about the non-poppet valve engines at Olympia. Ills. 3000 w. Autocar—Nov. 25, 1911. Serial. 1st part. No. 28649 A.

Accessibility—It Means Money. Illustrates and describes improvements and progress in construction, especially features of increased accessibility. 4000 w. Automobile—Jan. 4, 1912. No. 29487.

The Gasoline Automobile—Its Design and Construction. P. M. Heldt. The present article discusses the general structure of the car. 4000 w. Horseless Age—Feb. 21, 1912. Serial. 1st part. No. 30715.

New Automobile Construction (Neuere Automobil-Konstruktionen). E. Aders. Plates and description of the "Sperber" 1911 car. 2000 w. Motorwagen—Jan. 10, 1912. No. 30533 D.

See also Design, under *Automobiles.*

Control

Right or Left Control—Which? Presents the advantages and disadvantages of the two systems. Ills. 2500 w. Automobile—Aug. 1, 1912. No. 35006.

Crankshafts

Crankshaft Balancing. Illustrates and describes interesting experiments to show one of the most subtle causes of harsh running. Ills. 2000 w. Autocar—Jan. 6, 1912. No. 29655 A.

Crossley

The Crossley Cars for 1912. Illustrated descriptions of two new models with 4-cylinder engines and 4 speeds. 1000 w. Autocar—Oct. 28, 1911. No. 27718 A.

Cost

The Cost of Owning an Automobile. C. H. Calkins. Considers the items of expense in detail. 3000 w. Horseless Age—June 19, 1912. No. 33856.

The Influence of Low Production Cost on Quality. .Douglas Leechman. Read before the Inst. of Auto. Engrs. A critical examination of a low-priced car. Ills. 4000 w. Autocar—Oct. 12, 1912. No. 36913 A.

Economizing on a Car's Running Expenses. Calls attention to neglected points and their effects. Ills. 3500 w. Automobile—May 9, 1912. No. 32680.

Daimler

New Daimler Models. Brief illustrated description of changes introduced. 1200 w. Autocar—Oct. 19, 1912. No. 37062 A.

Delaunay-Belleville

The 26 h. p. Delaunay-Belleville. Illustrated description of this 6-cylinder, 4-speed car. 1000 w. Autocar—June 8, 1912. No. 33767 A.

The 25 h. p. Delaunay-Belleville. Illustrates and describes details of this 25 h. p. chassis. 1000 w. Autocar—Aug. 24, 1912. No. 35736 A.

Detroiter

Detroiter Prepares for Large Campaign. Information concerning the latest cars of the Briggs-Detroiter Co. Ills. 3000 w. Horseless Age—Sept. 25, 1912. No. 36374.

Design

A Chauffeur's Opinion of Modern Car Design. B. Kahn. Suggestions and criticisms of points of interest to chauffeurs. Ills. 2500 w. Auto Jour—Jan. 6, 1912. Serial. 1st part. No. 29652 A.

Conditions of Least Weight for Petrol-Engines. Editorial discussion of the proportions likely to give the best results. 2000 w. Engng—Feb. 23, 1912. No. 31038 A.

On the Road. Owen John. Discusses the waste of space occupied by the bonnet, and suggests other desirable changes. 1600 w. Autocar—March 16, 1912. No. 31516 A.

Some Possible Developments of the Motor Car. H. C. Clark. Read before the Coventry Engng Soc. Discusses modern requirements and expected developments. 9000 w. Autocar—March 23, 1912. No. 31716 A.

Improvements in Design for 1913. Eric W. Walford. Calls attention to points requiring to be improved. 1500 w. Autocar—July 27, 1912. No. 35141 A.

Progress in Automobile Design in 1911 (Progrès de l'Automobilisme en 1911). Description of improvements along several lines in the course of the year. Ills. 4500 w. Génie Civil—Dec. 16, 1911. No. 29793 D.

Digest of 1911 Chemical Progress Affecting Automobile Construction. Discusses the making of artificial rubber and other inventions relating to colorings for metals. 4500 w. Automobile—Feb. 22, 1912. Serial. 1st part. No. 30769.

See also Flywheels, under *Machine Elements and Design.*

D. F. P.

The 12-15 h. p. D. F. P. Car. Illustrated description of an excellent model of modern medium-powered type of chassis. 1000 w. Autocar—Oct. 12, 1912. No. 36912 A.

Driving-Shafts

Destructive Driving-Shaft Oscillation. From *Zeit des Mitteleuropaeischen Motorwagen Ver.* Reports investigations of the cause. 1500 w. Automobile—Dec. 21, 1911. No. 28913.

Electrical Devices

The How and Why of Electrical Devices Familiar to Automobilists. Joseph B. Baker. The present article explains the relations to magnetism and elcetricity in experiment and practice. Ills. 2000 w. Automobile—April 4, 1912. Serial. 1st part. No. 31794.

Electric Trucks

Electric Vehicles Research at the Massachusetts Institute of Technology. Reports a study to determine comparative costs of operating electric, gasoline, and horse vehicles. 2500 w. Elec Wld—April 6, 1912. No. 31850.

Electric Vehicle Controlling Systems. Harry E. Dey. Illustrates and describes some of the speed changing methods in use in electric vehicles. 1500 w. Horseless Age—April 10, 1912. Serial. 1st part. No. 31926.

A Scientific Test of the Electric Truck. John Ritchie, Jr. An illustrated study of the comparative cost of horse-drawn and power vehicles. 1500 w. Sci Am—June 22, 1912. No. 33867.

Edison Electric Automobile. Remarks on the characteristics of the Edison battery with description of some of the automobiles using it. Ills. 2000 w. Elect'n, Lond—June 14, 1912. No. 33921 A.

Endurance Tests

Military Endurance Tests on Heavy Weight Vehicles (L'Epreuve d'endurance militaire des véhicules de poids lourds). Description and results of truck tests, comprising seventy-four trucks. Ills. 5500 w. Genie Civil—Aug. 3, 1912. No. 35588 D.

Engine Cooling

Automatic Regulation of Engine Temperature. A device, invented by H. H. Wixon, for automatically keeping the cylinders of a water-cooled motor at a higher temperature. Ills. 2500 w. Horseless Age—Dec. 6, 1911. No. 28638.

Engine Design

Engine Design for Taking Advantage of H. P. Rating Rules. L. H. Pomeroy. Read before the Inst. of Auto. Engrs. Discusses anomalies in the various h.p. rating rules used in speed competition, and the means whereby their weaknesses may be of assistance in the design of engines. 1800 w. Auto Jour—Jan. 6, 1912. Serial. 1st part. No. 29653 A.

The Proper Ratio of Stroke and Bore in Automobile Engines. John Wilkinson. Discusses tendencies in engine design. 2000 w. Horseless Age—Jan. 17, 1912. No. 29857.

Engines

The Two-Stroke Cycle Engine. R. G. Wells. A critical analysis of some of the mechanical difficulties presented by the two-stroke cycle, with a view to their possible elimination or modification, particularly with reference to automobile and similar work. 3500 w. Engng—Nov. 3, 1911. Serial. 1st part. No. 28031 A.

Relative Efficiencies of Large and Small Engines. Considers factors having a bearing on the power output, and points which affect the power of the engine, and which do not. Ills. 1500 w. Autocar—Nov. 25, 1911. No. 28650 A.

The Rating of Petrol-Engines. Editorial review of a paper by H. L. Pomeroy read at the Inst. of Auto. Engrs. Discuss rating rules and engine design. 2000 w. Engng—Dec. 15, 1911. No. 29186 A.

The Horse Power of Automobile Engines. F. E. Watts. A discussion of the work done in England to arrive at a satisfactory formula for engine output, and some data of recent American engines. 2500 w. Horseless Age—April 17, 1912. No. 32170.

Symposium on the Automobile Motor. J. B. Entz. The long-stroke motor is discussed by J. B. Entz; valve mechanism by Jas. G. Sterling; motor starting devices, by Harold B. Anderson. General discussion. Ills. 8500 w. Jour Cleveland Engng Soc — June, 1912. No. 34058 D.

The Long-Stroke Motor for Cars. W. D. Ennis. Explains why they need redesigning, and urges the standardizing of the r.p.m. of the crank shaft rather than the piston speed in estimating the h.p. Ills. 2500 w. Automobile—Nov. 9, 1911. Serial. 1st part. No. 27967.

The Itala Rotary-Valve Engine. Illustrates and describes an engine of the 4-cylinder type, with its cylinders cast in pairs. 1200 w. Auto Jour—Oct. 28, 1911. No. 27668 A.

The Argyll Single-Sleeve-Valve Engine. Illustrated detailed description. 1200 w. Auto Jour—Oct. 28, 1911. No. 27667 A.

The Argyll 25 h.p. Sleeve Valve Engine. Illustrations, sections and description of a promising engine. Single valve sleeves with combined reciprocating and partial rotary motions. 3000 w. Autocar—Oct. 28, 1911. No. 27717 A.

80 mm. or 90 mm. Engines? Laurence H. Pomeroy. Explains the advantage that the larger engine possesses over the smaller engine. Ills. 1800 w. Autocar—Nov. 4, 1911. No. 28010 A.

The Castiglione and Bolton Engine. Illustrated description of an engine with a longitudinal rotary distributor above the cylinder heads. 1000 w. Autocar—April 20, 1912. No. 32506 A.

The "Low Engine." A. M. Low. Describes a remarkable light-weight petrol motor for cars and aeroplanes. 2000 w. Auto Jour—April 20 1912. No. 32504 A.

Some Notes on a New Engine. Illustrated notes on the design and working of the Kirke super-torque engine. 1500 w. Autocar—Dec. 30, 1911. No. 29607 A.

Engines in 1912. Illustrates and describes interesting types of automobile engines shown at the Olympia Show. 3500 w. Auto Jour—Nov. 4, 1911. No. 28012 A.

Engine Tests

Motor-Car Engine Tests. J. A. Moyer. Gives data of tests with gasoline of a two-cycle engine lubricated by oil admitted with the fuel, and of an air-cooled four cycle engine. Ills. 3500 w. Eng News—Jan. 4, 1912. No. 29393.

A Comprehensive Motor Test. Herbert Chase. Report of a laboratory test of a 6-cylinder motor with special reference to thermal and volumetric efficiencies, friction losses and composition of exhaust gases. 3500 w. Horseless Age—July 24, 1912. No. 34787.

Proper Testing of Motors, Determining Various Factors. Herbert Chase. Abstract of paper before the S. A. E. convention. On testing methods needed in present practice. 2500 w. Automobile—July 15, 1912. No. 34391.

Equipments

Some Special Applications of Gasolene-Electric and Storage Battery Automobile Equipments. H. S. Baldwin. Reviews recent applications of electric generators and motors to the propulsion of special conveyances. Ills. 4500 w. Gen Elec Rev—March, 1912. No. 30762 C.

Exhaust Gases

See Carburetors, under *Automobiles.*

Exhibitions

Motor Car Show at Olympia. The interesting exhibits shown at this exhibition of motor cars for pleasure purposes are illustrated and described. 2500 w. Engr, Lond—Nov. 3, 1911. Serial. 1st part. No. 28047 A.

London Olympia Show. Victor Hart. Illustrated review of noticeable tendencies in designs. 2500 w. Horseless Age—Nov. 15, 1911. Serial. 1st part. No. 28107.

Olympia Motor Exhibition. Illustrated review of the chief features of the show. 5000 w. Engng—Nov. 10, 1911. Serial. 1st part. No. 28128 A.

The Show at Olympia. An illustrated review prefaced by a general criticism of the exhibits. 62000 w. Autocar—Nov. 11, 1911. No. 28110 A.

Technical Innovations Seen at the Berlin Show. Dr. Ernst Valentin. Illustrates and describes interesting exhibits at the recent German exhibition at Berlin. 3300 w. Horseless Age—Nov. 15, 1911. No. 28106.

Review of the Garden Exhibition From a Technical Point of View. Illustrates and describes the principal changes shown. 3000 w. Automobile—Jan. 11, 1912. (Special.) No. 29583 C.

Fire Apparatus

Modern Developments in American Motor Fire-Apparatus. Herbert T. Wade. Illustrated descriptive review of mechanical types perfected under severe service conditions, and some costs of up-keep. 6000 w. Engineering Magazine—Feb., 1912. No. 30025 B.

Fire Department Motors of Birmingham, Ala. Maury Nicholson. An illustrated account of the motorizing of the fire department. 1500 w. Munic Engng—Oct., 1912. No. 36977 C.

Third Trial Run of the 4000 kg. Heavy Benzine "Rag" Truck of the Berlin Fire Department (Dritte Versuchsfahrt mit dem 4000 kg. schweren Benzin-Rag-Wagen der Berliner Feuerwehr). Reichel. Results of such a test of 1404 kilometers. Ills. 5000 w. Motorwagen—Nov. 30, 1911. No. 28883 D.

Third Trial Run of the 4000 kg. "Rag" Truck of the Berlin Fire Department (Dritte Versuchfahrt mit dem 4000 kg schweren Benzin-Rag-Wagen der Berliner Feuerwehr). Reichel. Description of car and tests made on this run. Ills. 4900 w. Zeit d Mitt Motorwagen Ver—Dec. 1, 1911. No. 29737 D.

The Development of the Motor Fire-Engine; the Results and Value of Past and Future Trial Runs with Motor Fire-Engines (Die Entwicklung der Motorspritzen, die Ergebnisse der stattgefundenen und der Wert der geplanten Prüfungsfahrten mit Motorspritzen). August Bauschlichter. Reviews progress and discusses present defects as determined by the trials. 7000 w. Motorwagen—June 10, 1912. No. 34540 D.

The Driving Engines and Pumps of the Motor Fire-Apparatus (Die Fahrgestelle und Pumpen der Feuerwehr-Motorspritzen). Herr Schwerdtfeger. Comprehensive review of several types of German fire-trucks, with results of their duty trials. Ills. and plates. 10000 w. Motorwagen—June 10, 1912. No. 34539 D.

Flanders

The 15-20 h. p. Flanders. Illustrated description of the 1912 models of this make. 1000 w. Autocar—March 9, 1912. No. 31243 A.

Ford

Making the Ford Motor Car. O. J. Abell. Illustrates and describes the foundry, heat treatment and machine operations of the plant, with special reference to the apportioning of work. 3500 w. Ir Age—June 6, 1912. Serial. 1st part. No. 33441 C.

Franklin

Franklin Omits Auxiliary Exhaust. Illustrates and describes changes made in the latest models of these cars. 4000 w. Automobile—Nov. 30, 1911. No. 28616.

Fuels

Use of Paraffin as Fuel. An account of experiments with this substitute for gasoline, and some of the difficulties encountered. 1500 w. Automobile—May 2, 1912. No. 32550.

Paraffin as Fuel. A. W. Reeves. Facts concerning its suitability for use on a motor car. 1500 w. Autocar—Aug. 31, 1912 No. 35863 A.

The Fuel Question and Kerosene Carburetors. Morris A. Hall. Discusses the possibility of using other fuels than gasoline, notably kerosene. Illustrates and discusses several types of vaporing devices for this fuel. 3000 w. Horseless Age—Sept. 18, 1912. No. 36034.

Coal as a Fuel for Automobiles. Victor Hart. Illustrated description of an English engine which uses coal as fuel, designed by A. M. Low. 1500 w. Horseless Age—Sept. 25, 1912. No. 36376.

The Economical Use of Gasoline. Remarks on the increase in cost, with suggestions leading to decrease in gasoline consumption. 1200 w. Horseless Age—Oct. 16, 1912. No. 36873.

Garage Lighting

Proper Illumination of the Electric Garage. J. G. Henninger. Read before the Elec. Veh. Assn. Discusses systems of lighting, both direct and indirect. Ills. 3000 w. Com Veh—Nov., 1911. No. 27745 C.

Illuminating the Private Garage. C. E. Palmer. Suggestions for electric wiring arrangements and equipments. Ills. 1200 w. Horseless Age—May 1, 1912. No. 32626 C.

Garages

The Importance of Systems for Garages. Henry J. Falk. Address before the Garage Assn. of Denver, Colo. Discusses the need of an accounting system to meet the requirements. 1800 w. Jour of Acc—Oct., 1911. No. 27628 C.

Garage Storage and Repair Systems. Gives simple methods and forms used. 2000 w. Com Veh—Jan., 1912. No. 29502 C.

The Portable Garage: Synonym for Economy and Convenience. Illustrated article describing various types and giving information. 5000 w. Automobile—April 11, 1912. No. 31932.

Private Garage Equipment and Arrangement. B. F. Geyer. Considers the essentials and requirements of the garage owner who cares for his own car. 1700 w. Horseless Age—May 1, 1912. No. 32625 C.

Home-Made Foundry Equipment for Garage Work. S. M. Howell. Illustrated suggestions for isolated places far from foundries. 1500 w. Horseless Age—May 1, 1912. No. 32624 C.

Planning and Outfitting a Small Country Garage. Discusses the layout of plant, necessary equipment and cost. Ills. 2500 w. Automobile—May 16, 1912. No. 32933.

System in a Private Southern Garage. Detailed description of the garage of E. F. Sims of Houston, Tex. Ills. 1500 w. Horseless Age—May 1, 1912. No. 32628 C.

Alamo Garage and Salesroom, San Antonio. Illustrations, with description of facilities and equipment. 1500 w. Horseless Age—May 1, 1912. No. 32621 C.

A Well Systematized Public Garage on Chicago's Boulevard System. Illustrated description of the People's Garage and Livery Co.'s building and its equipment. 1600 w. Horseless Age—May 1, 1912. No. 32617 C.

Bridgeport's Blue Ribbon Garage. Illustrated description of a well equipped garage. 1500 w. Horseless Age—May 1, 1912. No. 32169 C.

Broad-Oak Garage at Columbus, O. Illustrated description of an up-to-date garage and its management. 2000 w. Horseless Age—May 1, 1912. No. 32623 C.

Complete Establishment of the Britton Company in Hartford. Illustrated description of large automobile works, carrying on all branches of the automobile business excepting the assembling of a complete machine. 1800 w. Horseless Age—May 1, 1912. No. 32620 C.

Houston's Storage and Service Garage. Illustrated description of the Sweeney garage in Houston, Texas. 2000 w. Horseless age—May 1, 1912. No. 32622 C.

The Clinton Garage. Illustrated description of a public garage near the Brooklyn Bridge. 800 w. Horseless Age—May 1, 1912. No. 32618 C.

Warner Garage, Bridgeport, Conn. Illustrated description of a private garage and its equipment. 900 w. Horseless Age—May 1, 1912. No. 32627 C.

Practical Garage Fittings, and Bookkeeping for Motor Omnibus Service (Zweckmässige innere Einrichtung von Garage und Buchhaltung bei Automobil-Omnibus-Linien). E. Vogl. Suggestions for public garage arrangements, and accounting methods. Plate. 4000 w. Motorwagen—May 31, 1912. No. 33560 D.

Gears

Efficiency of Automobile Gears. Charles H. Logue. Factors influencing gear efficiency are pointed out, together with an analysis of each common type of gear with reference to its advantages and disadvantages. Ills. 2500 w. Am Mach—Nov. 2, 1911. No. 27645.

Automobile Gears. Walter Betterton. Considers processes in production. Ills. 1000 w. Prac Engr—July 25, 1912. Serial. 1st part. No. 35154 A.

Worm and Helical Gears as Applied to Rear Axels. Frank Burgess. Suggests standardization of terms to avoid confusion, and considers the qualification of a successful worm gear, and illustrates and describes types, and methods of testing. 2200 w. S. A. E. Bul—July, 1912. No. 36499 N.

Worm and Helical Gears as Applied to Rear Axles. Frank Burgess. Abstract of paper before the S. A. E. convention. Outlines the qualifications necessary in an efficient worm gear. 1200 w. Automobile—July 11, 1912. No. 34390.

Processes in Production of Automobile Transmission Gears. Walter Betterton. Read before the Graduates Sec. of the Birmingham (Eng.) branch of the Inst. of Auto. Engrs. Describes the materials used and processes. Ills. 5000 w. Mach, N Y—July, 1912. No. 34161 C.

See also Hydraulic Transmission, under *Automobiles;* and Gears, under *Machine Elements and Design.*

Gear Shifts

New Automatic Gear-Shifting Device. Illustrated description of a device for shifting gears by the clutch spring, controlled from quadrant. 1800 w. Automobile—May 16, 1912. No. 32934.

Fluid Pressure Speed-Changing. Brief illustrated description of a device invented by Allen M. Irish. 1500 w. Automobile—Dec. 28, 1911. No. 29264.

Germain

The 20 h. p. Germain. Illustrated description of this new model 700 w. Autocar—Oct. 5, 1912. No. 36828 A.

G. J. G.

Unit Power Plant Features the G. J. G. Illustrates and describes a recently brought out chassis, equipped with a unit power plant. 2000 w. Automobile—Dec. 7, 1911. No. 28696.

Halladay

Halladay Model 50 Is Now Six-Cylinder. Illustrates and describes changes introduced in new cars. 2000 w. Automobile—Sept. 5, 1912. No. 35790.

Haynes

Haynes Has Starter. Illustrated description of Model 22, for 1913. 3000 w. Automobile—Sept. 12, 1912. No. 35930.

Head Lights

Notes on the Design of Motor Car Head Lights. H. R. B. Hickman. Digest of a paper read before the Ill. Engng. Soc. Discusses the subject from the driver's point of view, and the road users; types of headlights are described. Ills. 3000 w. Autocar—Nov. 25, 1911. No. 28651 A.

Henderson

Henderson Here. Illustrates and describes interesting details of two models of this new car. 1500 w. Automobile—May 23, 1912. No. 33064.

Hill Props

Hill Props (Die Bergstütze). W. Schmerdtfeger. Calculations on the design and proper location of the drop props for holding cars against sliding backward down hill. Ill. Serial. 1st part. 5400 w. Motorwagen—Sept. 10, 1912. No. 36636 D.

Hispano-Suiza

The 15.9 Hispano-Suiza. Illustrates and describes the two designs of this car. 1500 w. Autocar—Sept. 21, 1912. No. 36477 A.

The 15.9- H.P. Hispano-Suiza Car, "Alphonso XIII" Model. Illustrated description of this new model. The chief characteristic is the extraordinarily long stroke of its engine. 2500 w. Auto Jour—Oct. 5, 1912. No. 36822 A.

Horns

The Warning Signal: Its Care and Repair. Illustrated discussion of how to keep motor-driven, vibrator, and exhaust horns in good condition. 6000 w. Automobile—Aug. 8, 1912. No. 35085.

Hospital

Automobile Hospitals, Boulant System (Voiture Chirurgicale Automobile, Système Boulant). Description of truck fitted up as a complete small operating room for military and ambulance purposes. Ills. 2200 w. Gènie Civil—July 13, 1912. No. 35582 D.

A Motor Hospital. Walter Bannard. Brief illustrated description of the latest French military vehicle. 500 w. Sci Am—Sept. 21, 1912. No. 36036.

Hudson

New Hudson Models Reveal Many Changes. Illustrates and describes the 37 horse-power chassis and its use for a touring car and a roadster. 1700 w. Horseless Age—July 3, 1912. No. 34271.

Two New 1913 Hudsons. Illustrates and describes details of the new six-cylinder model. 3500 w. Automobile—July 11, 1912. No. 34392.

Hudson Adds a Six to 1913 Line. Illustrates and describes the new car known as Model 54. 2000 w. Automobile—Aug. 1, 1912. No. 35008.

Hurtu

The New 14 h. p. Hurtu Car. Brief illustrated description of a new model. 1000 w. Autocar—Sept. 14, 1912. No. 36244 A.

Hydraulic Transmission

Hydraulic Transmission. Dr. Hele-Shaw's solution of the hydraulic transmission for motor cars is illustrated and described. 2500 w. Auto Jour—June 29, 1912. No. 34306.

The Hele-Shaw Rotary Pump and Motor. Reviews a system notable on account of the simplicity of its construction and of the means adopted for the reduction of friction. Ills. 3000 w. Engng—June 21, 1912. No. 34219 A.

The Hele-Shaw Hydraulic Transmission. An infinitely variable gear in place of clutch, gear-box and differential. Ills. 1800 w. Autocar—June 22, 1912. No. 34205 A.

Hydraulic Drive for Motor Cars (Hydraulischer Antrieb für Motorwagen). A. Heller. Description of the Lentz Drive. Essentially a replacement of the ordinary differential and transmission gears with a hydraulic motor. Ills. 3300 w. Zeitschr des Ver deutscher Ing—April 18, 1912. No. 32718 D.

The Hugo Lentz Hydraulic Drive for Motor Cars (Das hydraulische Getriebe für Motorwagen von Hugo Lentz). A. Heller. Details in the arrangement of motor and drive for this new type. Ills. and plate. 4500 w. Motorwagen—April 20, 1912. No. 32731 D.

Ignition

Construction of the High-Tension Coil. Explains how it is made and the theory of its action. Ills. 2000 w. Automobile —Feb. 1, 1912. No. 30230.

What the Big Shows Have Brought Out in the Ignition Field for 1912. Brief illustrated descriptions of new features in evidence. 5000 w. Automobile—Jan. 25, 1912. (Special.) No. 30074 C.

Ignition Timing. An illustrated study of the time of lag of coil and magneto sparks. 1000 w. Autocar—April 13, 1912. No. 32248 A.

Two Point Ignition—Its Advantages and Its Future. Albert L. Clough. Gives the substance of replies to inquiries made of manufacturers. 2500 w. Horseless Age—July 10, 1912. No. 34411.

Gas Distribution and Firing Order in Six Cylinder Motors. Eugene P. Batzell. Discusses some of the points which should guide the designer in the proper selection of the firing order, in relation with the system of gas distribution. 3500 w. Horseless Age—Sept. 25, 1912. No. 36375.

See also same heading, under *Combustion Motors.*

Industry

Impressions of the American Motor Industry. W. M. Letts. An account of an Englishman's visit to the New York show and to Detroit factories. 3000 w. Auto Jour—Feb. 17, 1912. No. 30785 A.

The Automobile Industry in the United States (Die Automobilindustrie der Vereinigten Staaten). M. J. Nagel. Statistics showing the growth of the industry in the U. S. 3600 w. Zeit d Mitt Motorwagen Ver—Oct. 30, 1911. No. 28492 D.

Automobile Cabs and Omnibuses in Berlin (Automobil-Droschken und Automobil Omnibusse in Berlin). Herr Pflug. A statistical article. Ills. 1800 w. Zeit d Mitt Motorwagen—Oct. 15, 1911. No. 28493 D.

Instruction

See Education, under INDUSTRIAL ECONOMY.

Ivor

The Ivor Cars. Illustrated detailed description of the 15-20-h. p. Ivor chassis. 1400 w. Auto Jour—July 27, 1912. No. 35139 A.

Japan

Jidosha—The Automobile in Japan. A. W. Babbitt. An illustrated account of recent progress in the automobile industry in Japan. 4500 w. Horseless Age—Feb. 14, 1912. No. 30432.

Julian

Julian Motor Co. Introduces "America's Highest Priced Motor." Illustrated description of the Julian six-cylinder motor. 2500 w. Horseless Age—Sept. 11, 1912. No. 35949.

Keeton

Keeton Announces Six and Four for 1913 Line. Details of new 6-cylinder and 4-cylinder models are illustrated and described. 2500 w. Automobile—May 16, 1912. No. 32935.

Keeton Car Embodies New Features. Illustrates and describes features of recent models. 1200 w. Horseless Age—May 8, 1912. No. 32671.

Kline

Kline Adds Coupé Model. Illustrated description of a special body construction which permits of change from coupé to torpedo roadster in ten minutes. 2500 w. Automobile—Oct. 17, 1912. No. 36872.

Knox

Knox Adopts Long-Stroke Motor. Illustrates and describes features of the 1912 cars of this firm. 3000 w. Automobile—Nov. 23, 1911. No. 28296.

Knox Line for 1913 Includes a New Six Cylinder Car. Illustrates and describes four new models, especially the six-cylinder car. 2500 w. Horseless Age July 11, 1912. No. 34391.

Knox Brings Out a New Six-Cylinder. Illustrates and describes changes appearing in new models. 3500 w. Automobile —Aug. 29, 1912. No. 35636.

Lagonda

A New Car with an Old Name. Illustrated description of the British-built 20 h.p. Lagonda. 1200 w. Autocar—Nov. 4, 1911. No. 28009 A.

Lanchester

The Lanchester Car. Illustrates and describes details of the design. 4000 w. Autocar—June 1, 1912. No. 33657 A.

Lancia

The 15 h. p. Lancia. Reviews the interesting points of design in this car. Ills. 1200 w. Autocar—March 30, 1912. No. 31874 A.

Lighting

Dynamos for Motor Road Vehicle Lighting. J. D. Morgan. Abstract of a paper read before the Birmingham Loc. Sec. of the Inst. of Elec. Engrs. Briefly describes a number of machines of different types.

2500 w. Elec Engr, Lond—Jan. 12, 1912. No. 29891 A.

Driving the Car at Night. H. S. Whiting. Illustrated account of improvements in lights and lighting of cars. 1800 w. Sci Am—Jan. 6, 1912. No. 29359.

Electric Lighting for Automobiles. Illustrates and describes various systems. 8000 w. Automobile—Jan. 25, 1912. (Special.) No. 30075 C.

Dynamos for Motor Road Vehicle Lighting. J. D. Morgan. Abstract of paper before the Birmingham Soc. of Inst. of Elec. Engrs. Describes the various dynamo arrangements suggested. Diagrams. 2500 w. Elect'n, Lond—Jan. 19, 1912. No. 30154 A.

Dynamo Lighting for Motor Vehicles. J. D. Morgan. Abstract of paper read before the Birmingham (Eng.) Sec. of the I. E. E. States the requirements for self-governing vehicle dynamos, and considers electrically self-governing dynamos and mechanically regulated dynamos. 4000 w. Horseless Age—July 17, 1912. No. 34642.

Dynamo Requirements for Electric Lights. Leonard Kebler. Read before the Soc. of Auto. Engrs. Considers voltage model for lamps of the desired capacity and for different types of motor designs. 2500 w. Automobile—May 2, 1912. Serial. 1st part. No. 32553.

Dynamo Lighting Sets. Gives descriptions of lighting sets and the difficulties overcome. The present number describes the Lucas. Ills. 1200 w. Auto Jour—Sept. 14, 1912. Serial. 1st part. No. 36245 A.

Magnetite Arc Projectors for Electric Vehicles. R. E. Neale. Brief descriptions of types. Ills. 600 w. Elec Rev, Lond—Aug. 30, 1912. No. 35871 A.

The Requirements of Automobile Electric Lighting Systems. Leonard Kebler. Considers the necessary qualifications for a dynamo lighting system for any particular use. 3000 w. S A E Bul—Sept., 1912. No. 36556 N.

The Smith Dynamo for Car Lighting. Illustrated description of the system. 1000 w. Auto Jour—Oct. 28, 1911. No. 27670 A.

Locks

Detachable Wheel Locks. Bertram C. Joy. Illustrates and describes locking devices in use. 3000 w. Autocar—April 13, 1912. No. 32249 A.

Locomobile

New Little Six Locomobile. Illustrated description of a new 38 h.p. car. 2000 w. Horseless Age—Jan. 3, 1912. No. 29384.

Longstroke

Longstroke Motors. Remarks on the tendency toward long-stroke motors, discussing the advantages and disadvantages. 3500 w. Automobile—Jan. 4, 1912. No. 29488.

Loreley

The 13.4-H. P. Loreley Car. Illustrated description of a well-built car with a 6-cylinder monobloc engine. 1500 w. Auto Jour—Sept. 7, 1912. No. 35984 A.

Lozier

Lozier Type 72. Illustrated description of a new 6-cylinder model with steering wheel to the left and levers in the center for right-hand control. 3500 w. Automobile—April 18, 1912. No. 32204.

Lubrication

Castor Oil for Engine Lubrication. Alexander Duckham. A criticism of this oil as a lubricant, showing that in internal combustion engines it must be used with discretion. 1200 w. Autocar—March 9, 1912. No. 31244 A.

Principles of Lubricating System Design. Illustrated review of methods employed. 6500 w. Automobile—Feb. 8, 1912. No. 30369.

Lubricating Systems. Review of the methods of maintaining the oil feed to the engine bearings. 4500 w. Autocar—April 20, 1912. Serial. 1st part. No. 32505 A.

The Question of Bearings and Oiling of Motors and Motor Cars (Zur Frage der Lager und Schmierung von Motoren und Motorwagen). Aug. Bauschlicher. General remarks on these debatable points. Serial. 1st part. 1400 w. Motorwagen—Apr. 14, 1912. No. 32317 D.

M. A. F.

The 10-14-H. P. M. A. F. Illustrates and describes a small car having a 4-cylinder air-cooled engine. 1300 w. Auto Jour—Sept. 14, 1912. No. 36246 A.

Mason

Mason Racer Analyzed. Illustrates and describes details of the motor and chassis. 1500 w. Automobile—Oct. 24, 1912. No. 36987.

Materials

Automobile Metallurgy Made Easy. E. F. Lake. First of a series of illustrated articles dealing with the strengths, uses, etc., of metals which enter into the construction of automobiles. Tensile strength is discussed in the present number. 1800 w. Automobile—Nov. 23, 1911. Serial. 1st part. No. 28295.

Test Methods and Machines for Material Used by the G. Derihon Company (Materialprüfungsmethoden und Materialprüfmachinen der G. Derihon-Gesellschaft). Ernst Valentin. Describes the various tests which this company places on all automobile parts. Ills. and plates. 7000 w. Motorwagen—May 20, 1912. No. 33559 D.

Maxwell

Maxwells for 1913 Replete with Improvements. Illustrates and describes changes introduced in the new cars. 1800 w. Horseless Age—Sept. 4, 1912. No. 35828.

The Maxwell Mascotte Car. Illustrates and describes a chassis with interesting points of design and a neatly executed unit system. 1500 w. Autocar—Aug. 31, 1912. No. 35864 A.

Metallurgique

The New 10-12-H. P. Metallurgique description. 800 w. Auto Jour—Aug. 10, 1912. No. 35285 A.

The 14-H. P. Metallurgique Landaulette. Illustrated description of a closed car of recent design. 2000 w. Auto Jour—April 6, 1912. No. 31983 A.

Metz

The Metz 22 Roadster. Illustrates and describes interesting features. 1500 w. Horseless Age—Dec. 6, 1911. No. 28637.

Military

Motor Transport. W. A. Alexander. The history of the motor-propelled cooker in the English manœuvres. Ills. 1500 w. Autocar—Oct. 19, 1912. No. 37061 A.

Gasoline in War. Theodore M. Raulein von Keler. Illustrates and describes European war automobiles of various types. 2000 w. Sci Am—Jan. 6, 1912. No. 29358.

The New Army Trucks (Der Neue Armee-lastzug). Fritz Listemann. Specifications for new types of German military automobiles. 3600 w. Motorwagen—Feb. 10, 1912. No. 31314 D.

Military Tests with the New 1913 Armee-lastzug (Militärische Prüfungsfahrt mit dem neuen Armeelastzug Type 1913). F. Listemann. Report of these tests begun on the 14th of November, 1911. Serial. 1st part. 1100 w. Der Motorwagen—Nov. 20, 1911. No. 28884 D.

The Program for the Endurance Test of Heavy Weight Military Cars in 1912 (Le Programme de l'Epreuve d'Endurance des "Poids Lourds" Militaires, en 1912). D. Renaud. Specifications for test weights and equipment. Ills. 3000 w. Génie Civil—May 4, 1912. No. 32781 D.

The German Military Motor Truck Bonus System. Dr. Ernst Valentine. Illustrates and describes the motor trains of Germany and explains the system that has helped their development. 1800 w. Horseless Age—May 15, 1912. No. 32918.

Modern Cars

The Modern Motor Car. W. Worby Beaumont. From *Times Engng. Sup.* Reviews the progress in automobile construction during the past eleven years. 2200 w. Motor Car Jour—Dec. 30, 1911. No. 29603 A.

The Riding Qualities of a Car. S. W. Harvey. Considers some of the requirements of modern cars, discussing springs, upholstery and shock absorbers. 2000 w. Sci Am—Jan. 6, 1912. No. 29355.

Moon

Moon Adds a Six to Its Line for 1913. Illustrates and describes three new models to be placed on the market. 2500 w. Automobile—Sept. 26, 1912. No. 36366.

Motor Cars

Betwixt and Between. W. G. Aston. Illustrates and describes types between the autocar and motor cycle, discussing the advantages and disadvantages of the several systems. 5000 w. Autocar—Jan. 20, 1912. No. 30151 A.

Gasolene Motor Cars. Illustrated description of cars used on the Nevada Copper Belt Ry. 700 w. Ry Gaz, Lond—Jan. 26, 1912. No. 30312 A.

Motor-Cycles

The Cycle and Motor-Cycle Exhibition. Brief review of the exhibits. 1800 w. Engng—Nov. 24, 1911. No. 28665 A.

The Olympia Motor Cycle Show. Illustrates and describes exhibits. 2500 w. Auto Jour—Nov. 25, 1911. No. 28652 A.

The Motorcycle of 1912. J. J. O'Connor. Illustrates and describes advances in motorcycle construction. 1600 w. Sci Am—Jan. 6, 1912. No. 29360.

Motor Plows

Motors Invade Agricultural Realm. Illustrates and describes some machines competing in the plowing competition in France, with operating costs. 2200 w. Automobile—Oct. 24, 1912. No. 36986.

Measuring Instruments for Investigating Motor Plows (Messinstrumente zur Untersuchung von Motorpflügen). Dr. Bernstein. Describes the various tests made for determining the power and efficiency of motor plows. Ills. 2800 w. Motorwagen—May 10, 1912. No. 33557 D.

Recent Motor Plows (Neuere Motorpflüge). K. Praetorius. A review of some of the plows as constructed in various countries. Ills. Serial. 1st part. 1400 w. Zeit d Mitt Motorwagen Ver—May 15, 1912. No. 33562 D.

Motor Plows (Motorpflüge). Herr Abrahamsohn. Development of three different classes of ploys as shown by patent literature. Ills. Serial. 1st part. 4200 w. Motorwagen—Aug. 10, 1912. No. 36156 D.

Motor Rating

Rating of Motor Cars for Taxation. Report of the committee appointed by the Lords Commissioners of His Majesty's Treasury. Brief editorial. 5800 w. Auto Jour—Sept. 21, 1912. No. 36479 A.

Motor Trucks

Notes on Comparative Cost of Horse and Motor Truck Transportation in Engineering and Contracting Work. Rollin W. Hutchinson, Jr. Gives typical cases showing the ability of the motor truck to save money. Ills. 2000 w. Engng & Con—June 19, 1912. No. 33819.

Records of Motor Truck Transportation. Rollin W. Hutchinson. Discusses the questions to be considered in weighing a motor truck proposition. Ills. 2500 w. Ir Age—June 20, 1912. No. 33851.

Motor Transportation for the Contractor. Rollin W. Hutchinson. Gives facts and figures as to operation from tests by two large contracting companies. Ills. 2500 w. Concrete-Cement Age—July, 1912. No. 34439.

Some Notes on the Development of Motor Trucks for Contractors' Service, With Data Concerning Operating Cost. Illustrates and describes several types of trucks adapted more or less particularly to contractors' and builders' hauling. 3500 w. Engng & Con—Feb. 7, 1912. No. 30376.

Cost of Work with Gasoline Motor Trucks. Louis Ruprecht. Gives graphic charts showing trucking economy under various conditions, reviewing the figures used in arriving at the total costs for plotting curves. 1000 w. S. A. E. Bul—May, 1912. No. 35417 N.

Diagrams Showing Operating Costs and Costs of Work of Motor Trucks. Reviews the figures used in arriving at the total costs for plotting curves in a graphical method presented by Louis Ruprecht in a paper before the Soc. of Auto. Engrs. 1000 w. Engng & Con—July 31, 1912. No. 35029.

Motor Trucks in the Service of Contractors. Illustrates and describes trucks used for various kinds of work, explaining their advantages. 1500 w. Horseless Age—July 31, 1912. No. 35036.

Motor Sizes and Drive Ratios for Commercial Vehicles. E. P. Batzell. Abstract of paper and discussion before the S. A. E. convention. Discusses motor sizes, economical requirements, etc. 6000 w. Automobile—July 11, 1912. No. 34389.

Worm-and-Gear Final Drive for Trucks. Ralph H. Rosenberg. Read before the Soc. of Auto. Engrs. Explains the developing of a design, and considers the cost and durability of the system. 1200 w. Automobile—Feb. 1, 1912. No. 30231.

The Trend in Truck Transmissions, Also Modern Clutch Construction, as Seen at the Shows. D. R. Hobart. Ills. 2500 w. Com Veh—Feb., 1912. No. 30261 C.

The Trend of the Times in Truck Work. Suggestions for improving their efficiency and increasing their economy. Ills. 3500 w. Com Veh—Feb., 1912. Serial. 1st part. No. 31008 C.

Petrol Rail Motor Coaches. T. F. Charlton and H. Grinsted. Read before the Coventry Branch of the Graduates Sec. of the Inst. of Auto. Engrs. Discusses the design of these vehicles, and the methods of transmission. 5000 w. Mech Engr—Jan. 19, 1912. No. 30165 A.

The Rural Motor Vehicle. Ernest Lincoln Ferguson. Considers the use of gasoline vehicles on the farm and the benefits derived. 2000 w. Sci Am—Feb. 10, 1912. No. 30331.

Results of Motor Vehicles Research at Massachusetts Institute of Technology. Information concerning this investigation, with tabulated data obtained. 1500 w. Elec Wld—May 18, 1912. No. 32939.

Motor Truck Service in Competition with a Railway. Information concerning a line running between Glen Cove on Long Island, and New York City. 1200 w. Ry Age Gaz—Sept. 20, 1912. No. 36071.

Hauling Structural Steel with Motor Trucks. Illustrated description of a truck with special body for carrying long beams. 1800 w. Ir Trd Rev—April 18, 1912. No. 32202.

The Motor Truck in Manufacturing. Harold Whiting Slauson. Illustrated article explaining its utility, adaptability, capacity, and economy under suitable conditions. 3000 w. Mach, N Y—Sept., 1912. No. 35664 C.

Utilizing the Total Overall Length of the Truck. Illustrates and describes some recent designs. 2200 w. Automobile—Feb. 8, 1912. No. 30368.

The Commercial Automobile (Les Véhicules Industriels Automobiles). Capt. Renaud. Reviews development, and discusses tractive resistance, etc. Serial. 1st part. 2400 w. Tech Mod—June 15, 1912. No. 34579 D.

Mechanical Notes for Truck Drivers. Remarks on care and repair work which drivers may make. Ills. 1500 w. Com Veh—Jan., 1912. No. 29503 C.

The Selection of a Motor Truck. Harry W. Perry. Illustrates and describes the leading features of this year's models. 3000 w. Sci Am—Jan. 6, 1912. No. 29354.

New Lozier Five-Ton Truck. Illustrated detailed description. 2000 w. Horseless Age—Jan. 3, 1912. No. 29383.

Locomobile 5-Ton Truck. Illustrates and describes features of interest. 2500 w. Automobile—July 4, 1912. No. 34251.

New Suburban Truck Has Worm Drive. Illustrated description of a vehicle placed on the market by the Suburban Motor Truck Co., Phila. 1500 w. Horseless Age—April 17, 1912. No. 32171.

See also Auto Power under CIVIL ENGINEERING, *Roads and Pavements*.

Mud-Guards

The Mud-Guard Competition of the Automobile Club (Le Concours de Pare-Boue de l'Automobile Club). E. Bret. Tests on various mud-guard applications determined by the height of splash through a specially prepared muddy section. Ills. and plate. 7200 w. Genie Civil—Mar. 9, 1912. No. 32094 D.

Multiple Drives

Multiple Direct Drives for Gasoline Cars. Albert L. Clough. Discusses the merits of such arrangements. 2000 w. Horseless Age—June 19, 1912. No. 33857.

Napier

The 45-H. P. Napier. An illustrated description of this chassis, which combines strength, efficiency and absence of noise. 2500 w. Auto Jour—April 13, 1912. No. 32250 A.

The New 45-H.P. Six-Cylinder Napier. Illustrates and describes improvements introduced. 1200 w. Autocar—Sept. 28, 1912. No. 36716 A.

National

Series V National. Illustrates and describes constructional changes in this new model. 2500 w. Automobile—May 2, 1912. No. 32552.

New Cars

The Briggs-Detroiter—A New Car. Illustrates and describes a car soon to be placed on the market. 1500 w. Horseless Age—Feb. 21, 1912. No. 30717.

Olds

Reo the Fifth—Olds Latest Model. Illustrated detailed description. 3000 w. Automobile—Dec. 21, 1911. No. 28912.

Omnibus

The Macfarlane and Burge Electric Omnibus System (Omnibus électrique systeme Macfarlane et Burge). F. Marion. Presents the chief advantages of their system of traffic transportation. Ills. 3200 w. Rev Indus—April 20, 1912. No. 32772 D.

Ordinances

The Street Ordinances of Berlin and the Automobile Traffic (Die Berliner Strassenordnung und der Automobilverkehr). Abstracts of such ordinances as relate to automobile traffic. 4000 w. Zeit d Mitt Motorwagen Ver—Jan. 30, 1912. No. 31305 D.

Overland

Two Models of 1913 Overland. Illustrates and describes details of new models. 2000 w. Automobile—Aug. 15, 1912. No. 35225.

Packard

The Packard Six for 1913. Illustrates and describes improvements introduced. 1800 w. Automobile—June 20, 1912. No. 33855.

Panhard-Levassor

Oldest Car in the World. Illustrations and brief description of a 21-year-old automobile in France. 600 w. Automobile—June 6, 1912. No. 33487.

Performance

"K"—A Basis for Comparison Between Cars and for Estimating their Performances. J. W. Roebuck. Notes and data relating to investigations into the performances which should be obtained from any kind of patrol-engined vehicle. Also editorial. 9500 w. Autocar—June 22, 1912. No. 34204 A.

Peugeot

The 17-22 H. P. Peugeot. Illustrated description of a 4-cylinder, 4-speed car with arched back axle and spring drive. 1200 w. Autocar—March 23, 1912. No. 31715 A.

Phanomobile

The Phanomobile Car. Illustrations, description and impressions of a trial run. 2500 w. Autocar—March 16, 1912. No. 31517 A.

Pierce-Arrow

1913 Pierce-Arrow. Illustrates and describes three new models, all of the 6-cylinder type, and the numerous mechanical changes. 5000 w. Automobile—Aug. 8, 1912. No. 35086.

Poss

Poss Light Delivery Wagon. Brief illustrated description of features of a 1000 pound motor delivery wagon. 1000 w. Horseless Age—Feb. 7, 1912. No. 30374.

Power

The Automobile as a Portable Source of Power. Illustrates and describes Auxiliary uses for the motor vehicle engine. 1500 w. Sci Am—May 18, 1912. No. 32948.

Premier

Premier Brings Out a Long-Stroke Six. Describes the general design of Premier cars and some interesting details. Ills. 3000 w. Automobile—Oct. 3, 1912. No. 36558.

Premier Sixes Only for 1913—A New Model Introduced. Illustrated description of the Premier Little Six touring car. 1700 w. Horseless Age—Oct. 2, 1912. No. 36509.

Pullman

Three Pullmans. Illustrates and describes details of new models. 2200 w. Automobile—July 18, 1912. No. 34636.

Racers

World's Greatest Racing Car. Illustrated detailed description of the Peugeot racer. 1500 w. Automobile—Sept. 26, 1912. No. 36364.

Radiators

In the Making of a Radiator. Illustrates and describes methods used in making the Livingston radiator, which is of the zigzag tube type. 2500 w. Automobile—Nov. 9, 1911. No. 27966.

Methods of Radiator Suspension. C. T. Schaefer. Explains how the radiators of motor trucks are protected against road vibration and the effects of distortion of their frames. Ills. 1500 w. Horseless Age—April 10, 1912. No. 31925.

Repairs

The Repair of Motor Vehicles. David J. Smith. Read before the Inst. of Auto. Engrs. Deals especially with difficulties which do not arise in manufacture. 3000 w. Horseless Age—Feb. 7, 1912. No. 30373.

Caring for Tires, Wheels and Rims. Suggestions for repairing punctures, locating leaks, etc. Ills. 3800 w. Automobile—April 18, 1912. Serial. 1st part. No. 32203.

First Aid for the Automobile. Illustrates and describes some road breakdowns and how to repair them. 3000 w. Automobile—May 30, 1912. No. 33335.

Rims

Captain Detachable Rims. Illustrates and describes particulars of the various types, including the new twin rim and the divisible rim. 800 w. Autocar—May 11, 1912. No. 32970 A.

Rotary Valves

Russel Rotary Valve Motor—A Self-Adjusting Rotary Valve. Illustrated detailed description. 2000 w. Horseless Age—Dec. 27, 1911. No. 29252.

Rover

The New 12 h. p. Four-Cylinder Rover. A description of the chassis and report of the running. Ills. 2500 w. Autocar—May 4, 1912. No. 32871 A.

The 1912 18 h. p. Rover. Illustrated description of a new four-cylinder model with four speeds. 1000 w. Autocar—May 25, 1912. No. 33445 A.

Sava

The 18 h. p. Sava Car. Illustrated detailed description. 1200 w. Autocar—April 27, 1912. No. 32827 A.

Scavenger Trucks

See Refuse, under CIVIL ENGINEERING, *Municipal.*

Scout

The 10-12 H.P. Scout Car. Illustrated detailed description of a 4-cylinder car, having four speeds and either bevel or worm drive at option. 1500 w. Autocar—Sept. 28, 1912. No. 36715 A.

Selden

Selden Refinements for 1912. Illustrates and describes details of interest. 3000 w. Automobile—Nov. 16, 1911. No. 28144.

Self-Starters

Making the Starting Crank Obsolete. H. P. Wilkin. Illustrates and briefly describes the different characteristics and methods of operation of types of self-starters. 2500 w. Sci Am—Jan. 6, 1912. No. 29356.

Self-Starters. J. Dalrymple Bell. Illustrated review of the present available systems. 4500 w. Autocar—March 2, 1912. No. 31130 A.

Self-Starters of Many Types. Illustrates and describes types of acetylene gas, electrical, compressed air, spring and lever starters. 7500 w. Automobile—Jan. 4, 1912. No. 29486.

Self-Starters at the Shows. H. H. Brown. Remarks on the features and advantages of types shown at the New York shows. Ills. 4500 w. Horseless Age—Jan. 17, 1912. No. 29855.

A New Self-Starting Device. Illustrated description of a device utilizing the magneto armature instead of a separate high-tension coil. 1500 w. Autocar—Feb. 10, 1912. No. 30657 A.

Self-Starters for Automobile Motors. Albert L. Clough. Considers the different systems and their relative availability for old cars. 4000 w. Horseless Age—June 12, 1912. No. 33697.

Starting by Electricity. Illustrates and describes the Cadillac self-starter in recent models. 2000 w. Autocar—Aug. 24, 1912. No. 35738 A.

Service Plants

System in the Service Plant. Describes the system of the R. & L. Co., New York City, distributors of Garford cars. 3500 w. Automobile—Aug. 15, 1912. No. 35224.

Sheffield-Simplex

The 25 H.P. Sheffield-Simplex Car. Illustrated description. 1500 w. Auto Jour—Feb. 3, 1912. Serial. 1st part. No. 30388 A.

Shock Absorbers

Review of the Shock Absorber Field. Illustrates and describes types. 3500 w. Automobile—Jan. 11, 1912. (Special.) No. 29585 C.

In the Making of Shock-Absorbers. Illustrates and describes the process of manufacture. 2000 w. Automobile—March 14, 1912. No. 31171.

Studies on Automobile Shock Absorbers (Etude des Amortisseurs d'Automobiles). N. Duaner. A mathematical review of strains and tensions to be considered. Diagrams. 5600 w. Genie Civil—Aug. 31, 1912. No. 36199 D.

Some Special Tests on Automobiles (Quelques Essais spéciaux sur les Voitures automobiles). M. Boyer-Guillon. Tests not only on horse-power determinations but also on the utility of the shock absorber in increasing the power of the car. Ills. 9000 w. Rev de Mecan—July 31, 1912. No. 35580 E + F.

See also Springs, under *Automobiles.*

Shops

Methods in the Dorris Motor Car Shop. F. A. Stanley. Illustrates and describes methods and special tools used in a St. Louis shop. 1200 w. Am Mach—Jan. 18, 1912. No. 29645.

Operations on Dorris Motor Car Parts. F. A. Stanley. Illustrates and describes tables and methods used. 1200 w. Am Mach—Feb. 15, 1912. No. 30419.

Siddeley-Deasy

The 18-24 h. p. Special Light Siddeley-Deasy. Illustrated detailed description of the design. 2200 w. Autocar—July 27, 1912. No. 35140 A.

Signals

Patent Signal Devices (Fahrrichtungszeigerpatente). Description of various devices attached to rear of car, operated by the driver, and indicating the direction of travel. Ills. Serial. 1st part. 2800 w. Zeit d Mitt Motorwagen Ver—Aug. 31, 1912. No. 36155 D.

Silencers

Silencers. W. G. Aston. Discusses the theory and construction of devices designed to reduce the noise of the exhaust. Ills. 3500 w. Autocar—July 13, 1912. No. 34764 A.

Singer

A Well-equipped Car. Illustrated description of a 20 h. p. Singer chassis with special tires and body and a self-starting system. 1000 w. Autocar—Aug. 24, 1912. No. 35737 A.

The Singer Cars. Illustrates and describes improvements in recent cars of this British company. 1700 w. Auto Jour—July 6, 1912. No. 34456 A.

Six-Cylinder Motors

Some Peculiarities of Six-Cylinder Motors. M. S. Young. Considers crankshaft arrangement, peculiar cause of vibration, etc. Ills. 2500 w. Horseless Age—March 6, 1912. No. 31055.

Six-Cylinder Motors. Reviews the progress of six-cylinder types during the past year. Ills. 5500 w. Automobile—Jan. 11, 1912. (Special.) No. 29586 C.

Sleighs

Automobile Sleighs (Traineau-Automobile). René Le Grain. A study of the automobile as applied to work in winter over snowy routes, and some devices for their propulsion. Ills. 5000 w. Bul Soc d'Encour—April, 1912. No. 32746 E + F.

S. P. A.

The 12-15 h. p. S. P. A. Chassis. Illustrates and describes features of the design. 1200 w. Autocar—Aug. 3, 1912. No. 35184 A.

Speed

How to Change Speed. Helpful suggestions. 2000 w. Auto Jour—June 22, 1912. No. 34203 A.

Speedometers

The Watford Speedometers. Illustrated description of the mechanism operating the speed indicator hand. 800 w. Autocar—Aug. 3, 1912. No. 35186 A.

See also same heading, under *Measurement.*

Springs

Springs and the Motorists' Comfort. Sketches showing types with remarks. 1500 w. Auto Jour—Nov. 11, 1911. No. 28111 A.

Springs and Shock Absorbers at the Shows. C. H. Calkins. Remarks on designs shown at the New York exhibitions. Ills. 1200 w. Horseless Age—Jan. 17, 1912. No. 29856.

The Mounting of Chassis Springs. F. E. Watts. Considers how the seats, pads and clips must be arranged in order not to interfere with the action of the springs or cause their breakage. Ills. 1200 w. Horseless Age—Jan. 10, 1912. No. 29580.

Pneumatic "Springs" for Automobiles. Illustrated description of the Westinghouse air spring as applied to an automobile. 1600 w. Eng News—Feb. 15, 1912. No. 30438.

Auxiliary Suspension. A review of the principal modern devices showing the advantages of supplementary springs. Ills.

4000 w. Autocar—Feb. 3, 1912. No. 30389 A.

Springs. A study of car suspension. 2500 w. Auto Jour—Aug. 10, 1912. No. 35284 A.

Star

The New 10 h. p. Star. Illustrated description of chassis having four cylinders en bloc, three speeds and bevel drive. 1000 w. Autocar—Dec. 9, 1911. No. 29033 A.

The 20-h. p. Star Car. Brief illustrated description of a moderately priced 6-cylinder car. 800 w. Auto Jour—May 11, 1912. No. 32969 A.

Statistics

Automobile Statistics in the German Empire (Automobil- Statistik des Deutschen Reiches). Curves showing the development or decrease in the use of automobile designs during five years. 3000 w. Motorwagen—July 10, 1912. No. 35545 D.

Steam Car

A New Steam Chassis. Illustrated description of the 25 h. p. Sheppee steam car. 3000 w. Autocar—July 27, 1912. No. 35142 A.

Stoewer

The 15-20 H. P. Stoewer Car. Illustrated detailed description. 1500 w. Auto Jour—March 30, 1912. No. 31875 A.

Testing

Machines and Methods for Testing Automobile Steel at the G. Derihon Plant in Loucin, L'ége (Materialprüfungswesen und Prufmaschinen für Automobilstahle der Fa. G. Derihon in Loucin bei Lüttich). E. Valentin. Describes laboratory methods and standards. Ills. 1800 w. Zeit d. Mitt Motorwagen Ver—July 31, 1912. No. 35549 D.

Tire Pumps

Motor-Driven Pumps as Standard Equipment. Chester S. Ricker. Remarks on the convenience of tire pumps, illustrating types. 2000 w. Horseless Age—Jan. 17, 1912. No. 29854.

Tires

From Tree to Tyre. Considers rubber gathering and the processes of manufacture of tyres. Ills. 3500 w. Autocar—March 2, 1912. No. 31131 A.

Proposed Substitutes for Pneumatic Tires. Ethelbert Favary. Describes a tire employing a purely mechanical principle, whereby resiliency is obtained by the flexation of a combination embodying pliable bands under tension supported by alternate blocks. 2500 w. S A E Bul—Sept., 1912. No. 36555 N.

Will Rubber Tires be Supplanted? Reviews what the inventors are doing to abolish the pneumatic tire and lower repairing expense. 2000 w. Sci Am—Jan. 6, 1912. No. 29361.

Tires—Proper Use and Care Needed. Illustrates and describes types and discusses cars and repairs. 6500 w. Automobile—Jan. 11, 1912. (Special.) No. 29587 C.

Tires: Their Use and Abuse. First of a series of articles giving practical hints as to the ways of getting the best results from tire equipment. 1200 w. Automobile—May 2, 1912. Serial. 1st part. No. 32551.

Tyre Economy. Eric W. Walford. Suggestions for reducing the wear and prolonging the life of tyres. Ills. 2000 w. Autocar—July 13. 1912. No. 34763 A.

How Tires Are Protected. Explains Methods used by depotmen in storing goods to supply the automobile trade of New York. Ill. 1800 w. Automobile—Oct. 3, 1912. No. 36557.

An Improved Method of Tire Repairing. S. M. Howell. Describes a method consisting of vulcanizing pieces of fabric over the hole on the inside. Ills. 1600 w. Horseless Age—Dec. 13, 1911. No. 29022.

Mechanical Points in Connection With the Construction of Solid Motor Tires. Charles B. Whittelsey. Read before the Soc. of Auto. Engrs. Reviews the history of tire construction, types, etc. 3000 w. Horseless Age—Jan. 17, 1912. No. 29858.

Some Observations on Solid Truck Tires. Presents interesting points noted in studying various types of truck tires, the effect of load, and other characteristics. Ills. 1200 w. Automobile—Sept. 26, 1912. No. 36367.

Some Observations on Tires for Commercial Vehicles. F. E. Whitney. Presents interesting points noted in studying various types of truck tires, the effect of load upon them, and some characteristics. Confined to vehicles traveling at less than 20 miles per hour. Does not consider pneumatic tires. Ills. 2500 w. S A E Bul—Aug., 1912. No. 36554 N.

Torque

Transmission Ratio and Torque. Forrest R. Jones. An explanation of these and analogous terms. Diagrams. 3000 w. Automobile—Dec. 14, 1911. No. 28971.

Torque-Stays and Radius-Rods. Explains their importance in transmitting the engine-power to the road-wheels of a car, and some of the difficult problems designers must solve. Ills. 1500 w. Auto Jour—Jan. 20, 1912. Serial. 1st part. No. 30150 A.

Tractors

The International Motor Contest at Winnipeg. L. W. Ellis. Illustrated account of the annual traction engine contest. 2000 w. Sci Am—Aug. 10, 1912. No. 35104.

Improved Steam Tractor. Illustrated detailed description of a steam tractor with condenser and spring draught gear. 1200 w. Engr, Lond—Feb. 2, 1912. No 30410 A.

Making the "Tractioneer." Lynn W. Ellis. Illustrated article on schools where traction engineering and farming are taught. 2500 w. Sci Am—Feb. 10, 1912. No. 30330.

The General Agricultural Exhibit at Paris (Le Concours Général Agricole de Paris). G. Coupan. Illustrated review of some of the farm tractors at the exhibit in February. Serial. 2nd part. 3200 w. Génie Civil—April 13, 1912. No. 32775 D.

Petrol-Motor Tractors. Illustrates and describes powerful tractors suitable for use on large farms or for contractors having heavy haulage. 1000 w. Engng—June 28, 1912. No. 34332 A.

Six-Horse-Power Single-Cylinder Traction Engine with Superheater. Illustrated description of an engine exhibited at the recent Royal Agricultural Show. 500 w. Engng—July 19, 1912. No. 34898 A.

Transmission Noises

Contributory Causes of Transmission Noise. E. J. Bartlett. An analysis of the causes of noise in the transmission and suggestions for its reduction or elimination. Ills. 3000 w. Horseless Age—Jan. 24, 1912. (Special.) No. 30096 C.

Universal Joint

The Universal Joint (Die Beweglichkeit der knochengelenke). O. Winkler. Describes the construction and sphere of activity of the universal joint. Ills. Serial. 1st part. 1800 w. Motorwagen—Jan. 31, 1912. No. 30545 D.

Kardan Joints in Automobile and Boat Construction (Kardangelenke im Automobile- und Bootsbau). Karl Regensteiner. An examination into the kinematic and dynamic conditions covered by the Kardan universal joint. Ills. and diagrams. 5400 w. Zeit d Mitt Motor Ver—June 15, 1912. No. 34538 D.

Valveless

Valveless Four Stroke Motors (Les Moteurs sans Soupapes a quatre temps). G. Lavergne. The Knight and other types of valveless motors are discussed. Ills. 3600 w. Rev Gen des Sciences—Jan. 15, 1912. No. 30603 D.

New Motors for Automobiles (I nuovi motori per vetture automobile). C. Boella. Comparison of the Knight silent motor and the Itala valveless motor. Ills. 2400 w. Industria—Jan. 7, 1912. No. 30636 D.

Valves

Valves—Tendencies and Design. Illustrates and describes types. 5500 w. Automobile—Jan. 25, 1912. (Special.) No. 30076 C.

Renewing Valve Seats and Replacing Valve Springs. Suggestions for the work, and for care of valve springs. 1500 w. Auto Jour—March 9, 1912. No. 31245 A.

Valve Stem Leaks and How to Stop Them. A. L. Clough. Explains the cause of the leaks and the remedy. 900 w. Horseless Age—Sept. 25, 1912. No. 36373.

Noiseless Motor Valves (Der Geraüschlose Ventilmotor). Hubert Schimpf. Description of the operation and efficiency of these types. Diagrams. 2700 w. Zeit d Mitt Motorwagen Ver—Jan. 30, 1912. No. 31306 D.

Valve Sleeves

See Shop Practice, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Valve Timing

Valve Timing of Four and Six Cylinder Automobile Motors. E. P. Batzell. Considers the effects of overlapping of inlet and exhaust periods and of piston speed on the most advantageous valve timing. 5000 w. Horseless Age—July 10, 1912. No. 34410.

Vulcanizers

Vulcanizing a Tire. Illustrates and describes hot and cold processes of repairing outer casings and inner tubes. 2200 w. Automobile — June 13, 1912. No. 33694.

The H. F. "Baby" Vulcanizer. Its capabilities of dealing with tire repairs are explained. Ills. 1500 w. Autocar—May 18, 1912. No. 33261 A.

Wheels

The Warland Dual Rim. Illustrated description of the latest pattern, together with some particulars of the Tenax steel wheel. 1200 w. Autocar—Dec. 30, 1911. No. 29606 A.

Wire Wheel Again Comes to the Front. Illustrates and describes the mode of manufacture. 1600 w. Automobile—May 16, 1912. No. 32932.

Testing Wheel Strength. Brief report of tests at Coventry, England, of wire, steel, and hickory types. Ills. 1500 w. Automobile—June 13, 1912. No. 33695.

On the Attachment of Detachable Wheels. John V. Pugh. Illustrates and describes the new Rudge-Whitworth detachable wheel and the self-tightening nut. 1000 w. Auto Jour—June 8, 1912. No. 33765 A.

A New Rudge-Whitworth Detachable Wheel. Illustrates and describes a new detachable system, especially the self-tightening and self-locking device. 1500 w. Autocar—May 18, 1912. No. 33259 A.

White

The Latest 20-30 h.p. White. Illustrates and describes the features of interest. 1500 w. Autocar—Sept. 21, 1912. No. 36478 A.

Winton

New Winton Out. Illustrates and describes the changes in new model. 2500 w. Automobile—June 27, 1912. No. 34107.

COMBUSTION MOTORS

Carburetors

Methods Used in Making a Carburetor. Glenn Muffly. The tool equipment employed for this work in a Chicago shop is illustrated and described. 500 w. Am Mach—Aug. 1, 1912. No. 34998.

See also same title, under *Automobiles.*

Combustion

Surface Combustion. William A. Bone. Lecture before the Am. Gas Inst. Describes important features of two new processes of "incandescent surface combustion." Ills. 9800 w. Pro Age—Dec. 15, 1911. No. 28966.

Surface Combustion. William A. Bone. Explains the underlying principles and the results achieved, some applications and experiments. Ills. 9000 w. Jour Fr Inst—Feb., 1912. No. 30701 D.

Surface Combustion. Editorial review of the lecture by Prof. William A. Bone, at Leeds University, on some of the newer applications of the principle of surface combustion. 3000 w. Engng—May 10, 1912. No. 32988 A.

Gas Combustion at Hot Surfaces. Abstracts of parts of a paper by Prof. W. A. Bone, on the effect of incandescent surfaces in accelerating combustion of a mixture of fuel gas and air. Ills. 2000 w. Eng News—Jan. 18, 1912. No. 29834.

Surface Combustion. Raymond C. Benner. Remarks on the experimental work of W. A. Bone, and an application of this method of heating. Ills. 1600 w. Min & Sci Pr—March 2, 1912. No. 31064.

Flameless or Surface Combustion. John B. C. Kershaw. Illustrated description of a new method of using gaseous fuel for heating and steam-raising purposes. 2200 w. Met & Chem Engng—Dec., 1911. No. 28585 C.

Flameless Combustion. Carleton Ellis. Reviews briefly the present position of science with respect to this subject, as stated by Prof. William A. Bone, and the advantages claimed for the new system; diaphragm heating and its applications, etc. General discussion. Ills. 10500 w. Bul Am Inst of Min Engrs—Sept., 1912. No. 36307 F.

Smokeless Combustion of Bituminous Coal in the Pittsburgh District. Mirabeau Sims. The writer's theory of how, when, and why it can be made possible. Discussion. 16000 w. Pro Engrs' Soc of W Penn —Nov., 1911. No. 28794 D.

Combustion Measurement of Combustible Gases (La Comburimetrie des Combustibles Gazeux). A Grebel. Studies of the coefficients of combustion of various gases. Diagrams. 7000 w. Genie Civil —July 27, 1912. No. 35586 D.

See also Fuels, under *Steam Engineering.*

Diesel Engines

The Diesel Oil-Engine, and Its Industrial Importance, Particularly for Great Britain. Dr. Rudolph Diesel. Illustrated review of its development and applications, discussing questions of general importance. 15000 w. Inst of Mech Engrs—March 15, 1912. No. 31723 N.

The Present Status of the Diesel Engine in Europe, and a Few Reminiscences of the Pioneer Work in America. Rudolph Diesel. An illustrated review of the development in Europe and of pioneer work in America. 7500 w. Jour Am Soc of Mech Engrs—June, 1912. No. 34016 D.

The Application of Diesel Engines to Locomotion and Navigation (Les applications du moteur Diesel a la locomotion et a la navigation). Rudolph Diesel. Discusses available oils for use, suggests adaptability for automobile propulsion, and describes the growth in maritime service. Ills. 3600 w. Tech Moderne—June 1, 1912. No. 34001 D.

The Diesel Engine. S. M. Howell. Illustrated description of the self-igniting system of operation of Diesel engines. 2500 w. Mach, N Y—April, 1912. No. 31668 C.

Diesel Engine Design. Paul H. Russel. Considers present tendency in the designs, types, particularly the four-cycle single-acting engines. Diagrams. 2000 w. Mech Wld—June 28, 1912. Serial. 1st part. No. 34326 A.

Present and Future Importance of the Diesel Engine (L'importanza attuale e l'avvenire dei motori Diesel). Mario Dornig. This first paper discusses the principal types of Diesel engines and their present functions. Ills. Serial. 1st part. 3600 w. Monit Tec—June 20, 1912. No. 34588 D.

A New Diesel Engine Formula. P. A. Holliday. Develops formula and illustrates by example. 7000 w. Engr, London—April 5, 1912. No. 32100 A.

Notes on Maintenance of the Diesel Engine. Considers some difficulties and their remedies, and things of importance for their successful working. 1500 w. Elec Rev, Lond—April 19, 1912. No. 32503 A.

The Diesel Engine from the User's Standpoint. William J. U. Sowter. Abstract of a paper before the Dublin Sec. of the I. E. E. Notes on its advantages, and maintenance. 2500 w. Elect'n, Lond—May 31, 1912. No. 33664 A.

The Diesel Engine from the User's Standpoint. William J. U. Sowter. From a paper before the Dublin Sec. of the I. E. E. Notes on the advantages, cost of running and maintenance. 2800 w. Mech Wld—July 26, 1912. No. 35160 A.

The Langen and Wolf Diesel Engine. Illustrated description of engines of the four-cycle trunk piston type, with the cylinder jackets cast with the A frame supports. 1200 w. Engr, Lond—July 26, 1912. No. 35169 A.

Four Cylinder Four-Cycle Diesel Engines. Illustrates and describes examples for land and marine purposes. 3500 w. Engng—May 24, 1912. No. 33462 A.

The F. I. A. T. Diesel Motor. Deals particularly with a 4-cylinder engine of 100 h. p. Ills. 2500 w. Engr, Lond—May 31, 1912. No. 33676 A.

A Diesel Plant for Rolling Mill Drive (Eine Dieselanlage für Walzwerksbetrieb). H. Baudisch. Gives results from this service at the Achenrain Brass Foundry during the past two years. Ills. 2000 w. Zeit Oest Ing u Arch Ver—July 12, 1912. No. 35530 D.

See also same heading, under MARINE AND NAVAL ENGINEERING, and Fuels, under *Combustion Motors.*

Engine Building

Metallurgy for the Engine Builder. Seth G. Malby. Brief study of metals, their manufacture, heat treatment, composition, etc., with remarks on corrosion. Ills. 5000 w. Rudder—May, 1912. No. 32678 C.

Firing

A Gas Accumulating Firing System. Kurt Deinhardt. From a paper presented at the Tech. High School, Charlottenburg, Germany, by Dr. Herman Beck. Describes the Schnabel system which involves the flameless combustion of gas under pressure. Ills. 1800 w. Am Mach—Nov. 9, 1911. No. 27777.

Fuels

Tar and Tar Oil as Driving Mediums for the Diesel Engine (Teer und Teeröl als Treibmittel für den Dieselmotor). Herr Rath. Results of various grades of coal-tar and its products. 5600 w. Glückauf—June 22, 1912. No. 34510 D.

Experiments on a 480 H.P. Diesel Engine Driven with Tar Oil (Untersuchung eines mit Teeröl betriebenen 480 PS-Dieselmotors). Herrn Bütow and Dobbelstein. Description of the engine, followed by results of the tests on this fuel. Ills. 2400 w. Glückauf—June 22, 1912. No. 34509 D.

A Gas Engine Consuming Coal Direct. Illustrates and describes the invention of Archibald Low. 1500 w. Autocar—Sept. 7, 1912. No. 35983 A.

The Determination of Moisture in Fuel. J. A. P. Crisfield. Describes a moisture determinator, for making determinations at the place where the fuel is consumed. Ills. 2000 w. Jour Fr Inst—Nov., 1911. No. 28278 D.

Solid Gasoline as a Fuel for Gas Motors. Reginald W. Crowly. Report of experiments conducted in Europe, resulting in producing gasoline in solid form. 2500 w. Com Veh—Nov., 1911. No. 27748 C.

Sulphur in Solid Fuels (Der Schwefel in Festen Brennstoffen). Rudolf Schäfer. The analysis of fuels containing sulphur. Serial. 1st part. 1700 w. Giesserei-Zeit—Oct. 15, 1911. No. 28419 D.

See also same heading, under *Automobiles;* and Gasoline, under *Combustion Motors.*

Gas

The Technique of Gas Manufacture. Alfred E. Forstall. Address delivered at the celebration of the Centenary of the introduction of gas as an illuminant, April 19, 1912. 8500 w. Jour Fr Inst—Sept., 1912. No. 36305 D.

Gas Analysis

A Modified Orsal-Apparatus. E. J. Billings. Illustrated description of a combined apparatus for sampling and analyzing furnace gases. 900 w. Power—July 16, 1912. No. 34452.

Gas-Engine Cycles

Mode of Cycle Regulation and the Construction of Internal Combustion Engines (Mode de Réglage Cycles et Construction des Moteurs à Combustion Interne). R. E. Mathot. Reviews the construction, ignition, compression, cooling and governing of modern two- and four-cycle engines. Ills. Serial. 1st part. 12100 w. All. Industrielle—June, 1912. No. 33599 D.

Gas Engine Design

Engine Design Suggestions. Peter Jenness. Discusses the question of valve timing. 3000 w. Rudder — May, 1912. No. 32679 C.

Desirable Improvements in American Gas Engine Design. C. F. Hirshfeld. Calls attention to faults found in many American gas engines, and discusses critically points in practice. Ills. 3500 w. Mach, N Y—July, 1912. No. 34168 C.

Improvements in Gas Engine Design. George M. Strombeck. A reply to Prof. Hirshfeld's article in the July number. 1600 w. Mach, N Y—Sept., 1912. No. 35669 C.

Design Constants for Small Gasoline Engines. With special reference to automobile work. W. D. Ennis. An attempt is made to develop a more general expression which shall include the effect of piston speed variations. 2000 w. Jour Am Soc of Mech Engrs—Dec., 1911. No. 28733 C.

The Design of the Intake Pumps in the Körting Two-Cycle Gas Engine (Zur Berechnung der Ladepumpen der Körting-Zweitaktgasmaschine). W. Borth. Giving the mathematical calculations determining efficiency. Ills. 5000 w. Zeitschr des Ver deutscher Ing—Sept. 14, 1912. No. 36624 D.

Gas Engine Economy

Comparison of Commercial Economy of Gas Engines and Steam Turbines. Franklin M. Farwell. Gives practical data relating to operation of blast-furnace gas-engines with electrical generators. 2500 w. Elec Wld—Feb. 3, 1912. No. 30265.

Gas Engine Failures

An Analysis of Some Recent Gas Engine Failures. Howard S. Knowlton. Gives facts in connection with a number of recent gas-engine breakdowns. Ills. 2500 w. Power—Dec. 26, 1911. No. 29164.

Gas-Engine Operation

How to Run Jump-Spark Gas Engines. A. L. Brennan, Jr. Suggestions of value to the operator. 1500 w. Rudder—Oct., 1912. No. 36528 C.

Gas Engines

The Future of Gas Power. Charles E. Lucke. Abstract of an address on "Fuel Economy in Factories," delivered to the Am. Chem. Soc. A comparison of the relative merits of gas and steam-power. 2500 w. Ind Engng—Jan., 1912. No. 29996 C.

The Gas Power Field for 1911. Robert H. Fernald. Reviews the development during the year, which has been a year of continued prosperity. 2500 w. Jour Am Soc of Mech Engrs—Jan., 1912. No. 29930 D.

A New Type and Method of Construction of Large Gas Engines. Alan E. L. Chorlton. Read before the Iron & Steel Inst. Remarks on the limitations that have prevented the progress of large gas engines, with a general description of the improved type. Ills. 4000 w. Ir & Coal Trade Rev—Oct. 4, 1912. No. 36929 A.

Methods of Driving by Gas Engines for Collieries. Alan E. L. Charlton. Abstract of paper read before the Midland Inst. of Min., Civ., & Mech. Engrs. Considers methods of obtaining gas for power and results obtained, methods of application, etc. Ills. 4500 w. Mech Engr—Dec. 22, 1911. No. 29462 A.

Suction Gas and Low Insulation. Leonard Harding. Brief statement of results of investigation showing that where these low insulation troubles are experienced there are comparatively large quantities of sulphurated hydrogen present. 1000 w. Elec Rev, Lond—Dec. 15, 1911. No. 29216 A.

Some Arguments on Internal Combustion Engines (Alcuni argomenti sopra i motori a combustione interna). G. Belluzzo. Discussion of the various types. Ills. Serial. 1st part. 3000 w. Industria —Nov. 12, 1911. No. 28899 D.

Increasing the Capacity of Large Gas Engines. F. E. Junge. Gives a summary of results of an investigation by Wilhelm Hellmann, in Germany. Ills. 3500 w. Power—March 19, 1912. No. 31237.

Increasing the Capacity of Large Gas Engines. Gives summary of results from investigations by Wilhelm Hellmann, as given to the Soc. of German Engrs. Ills. 1500 w. Prac Engr—April 12, 1912. Serial. 1st part. No. 32260 A.

Some Recent European Gas Engine Plants. Austin C. Lescarboura. Brief illustrated description of plant's using the Nürnberg gas engines. 600 w. Power —Aug. 27, 1912. No. 35442.

Before and After Taking in a Charge. Cecil P. Poole. A study of what happens to a gas and air mixture inside an engine cylinder. 2500 w. Power—Sept. 24, 1912. No. 36242.

Preheating Gas Engine Charge. P. A. Tanner and A. C. Edwards. Reports a series of tests made to determine the effect on a gas engine's economy by preheating the charge. 1500 w. Power—Sept. 10, 1912. No. 35856.

Temperature of Gas-Engine Cylinders. John Batey. Considers its effect on the power factor and upon heat efficiency. 1800 w. Cassier's Mag—April, 1912. No. 31832 B.

Heat-Flow in Gas Engine Cylinders. Information from a recent report before the British Assn. for the Adv. of Science, summing up the best knowledge at the present day, of what goes on inside a gas engine cylinder. 4000 w. Eng News—Oct. 3, 1912. No. 36573.

400 Brake Horse-Power Two-Cycle Gas-Engine. Illustrated description of a two-cycle single-cylinder gas-engine for driving cement-grinding mills. 1600 w. Engng—Aug. 30, 1912. No. 35888 A.

The Design and Construction of a New Gas Engine. Illustrated description of the Cooper twin-tandem gas engine and some applications. 2000 w. Ir Trd Rev—July 11, 1912. No. 34388.

Some Details of the Cooper Gas Engine. Illustrations with brief description. 800 w. Power—Oct. 15, 1912. No. 36802.

General Management of Gas Engines and Their Troubles. A. L. Brennan, Jr. Detailed study of gas engines and their management. 4000 w. Rudder—April, 1912. Serial. 1st part. No. 31788 C.

330-Brake Horse Power Tandem Gas Engine. Illustrated detailed description of one of three engines recently constructed for Queensland. 2000 w. Engng—June 14, 1912. No. 33939 A.

Trebert Gasoline Engine. Illustrated description. 700 w. Power — June 4, 1912. No. 33422.

Gasoline Industrial Locomotives. Frank C. Perkins. An account of difficult conditions to which the internal combustion motor has been adopted. Ills. 1000 w. Mines & Min—July, 1912. No. 34184 C.

The Use of Gas-Engines in Central Stations (L'Emploi des moteurs a gaz dans les stations centrales d'électricité). A. Witz. Discussion of the feasibility of the use of gas, and results of some of the tests made. 5600 w. Génie Civil—Nov. 11, 1911. No. 28861 D.

The Bituminous Gas Engine in South Africa. Illustrated description of the bituminous gas plant at the Groenfontein tin mines. 1700 w. Engr, Lond—March 8, 1912. No. 31268 A.

See also Diesel, Engines, Gas Engines, and Internal Combustion, under MARINE AND NAVAL ENGINEERING; Engines, under *Automobiles*, and Gas Engines, under *Steam Engineering*.

Gas Exhausts

The Exhaust of Gases through Nozzles (Das Ausströmen von Gasen durch Düsen). Georg Hamel. Enlargement on the theories expressed by H. Lorenz and L. Prandtl in 1903 and 1904. 3300 w. Zeitschr d Ver Deutscher Ing—Nov. 11, 1911. No. 28813 D.

Gas Furnaces

See Furnaces, under *Machine Works and Foundries.*

Gasoline

Production of Gasoline from Natural Gas. C. F. Hirshfeld. Considers actual and possible processes and apparatus. Ills. 4000 w. Engineering Magazine—Sept., 1912. No. 35448 B.

Squeezing Gasoline Out of Natural Gas. Frank P. Peterson. Explains the scientific principles of recovering gasoline from oil well gases. Ills. 2500 w. Sci Am—Aug. 17, 1912. No. 35215.

Gas Power Plants

Gas-Operated Power-Station at Kamata, Japan. Illustrated detailed description of the gas engines and their working. Plates. 2500 w. Engng—Sept. 20, 1912. No. 36492 A.

Wood Refuse Suction-Gas Plant. Line drawings and description of a plant of 50 h. p. capacity, which has been working in a sawmill in the East of England for some twelve months. 1000 w. Mech Wld—Sept. 27, 1912. No. 36725 A.

A 15000-h.p. Coke Oven Gas Engine Plant. C. A. Tupper. Illustrated description of the largest power plant in the world operated on coke oven gas. The electric power station at Alsdorf, Germany. 1600 w. Ir Age—Dec. 21, 1911. No. 29106.

Blast-Furnace Gases in the Foundry. R. Buck. Abstract translation from *Stahl u Eisen.* Discusses its use for drying purposes and for heating open-hearth furnaces. 1500 w. Ir & Coal Trds Rev—Dec. 1, 1911. No. 28786 A.

See also Pumping Plants, under *Hydraulic Machinery.*

Gas Producers

Points Concerning Producer Plants. C. F. Publow. Describes producer plant installation and operation in detail. 4500 w. Ap Sci—March, 1912. No. 31783 C.

The Status of the Gas Producer and of the Internal-Combustion Engine in the Utilization of Fuels. Robert Heywood Fernald. A report of investigations made by the U. S. Government. Ills. 42 pages. U S Bureau of Mines—Tech Paper 9. No. 34370 N.

Gas Producers (Les gazogènes). Brief outline of the underlying principles of gas producers. 3800 w. Rev Indus—July 13, 1912. No. 35570 D.

Notes on Producer Gas Power. H. F. Smith. Discusses the practical operation of gas producers. Ills. 7500 w. Jour W Soc of Engrs—Sept., 1912. No. 37037 D.

Tests of a Suction Gas Producer. C. M. Garland and A. P. Kratz. Reviews the theory of the gas producer, explaining the object of the tests and methods of experimentation, giving results and conclusions. Ills. & tables. 90 pages. Univ of Ill Bul —No. 50. No. 28739 N.

Vertical Retorts for Continuous Distillation (Corunes Verticles a Distillation Continue). E. Lemaire. A study of the Woodall-Duckham or Bournemouth system, with special attention to the Lausanne gas plant. Ills. and plate. 6000 w. Genie Civil—Mar. 23, 1912. No. 32099 D.

A Paraffin Gas Producer. Illustrated description of an arrangement to supply paraffin in a form suitable for fuel of an internal combustion engine. 1000 w. Autocar—April 20, 1912. No. 32508 A.

Bituminous Coal Producers for Power. C. M. Garland. Describes the Apparatus and general arrangement of bituminous coal producers as designed for power. Ills. 5500 w. Jour Am Soc of Mech Engrs—June, 1912. No. 34015 D.

New Bituminous Gas Producer. Illustrates and describes the Nordensson furnace gas producer. 1200 w. Ir Age—Dec. 14, 1911. No. 28946.

The Slagging Type of Gas Producer, with a Brief Report of Preliminary Tests. Carl D. Smith. Information concerning this type and results of tests. Ills. 3500 w. U S Bureau of Mines—Tech Paper 20. No. 34800 N.

Modern Technique of the Gas Industry (Technique moderne de l'Industrie du Gaz). R. Masse. Reviews the history of gas production and gives modern practice in detail. Ills. 25,000 w. Bull Soc d'Encour—July, 1912. No. 36196 E + F.

The Value of Sawmill Refuse as Fuel in Gas Producers. Charles E. Snypp. Gives the writers experience with bituminous coal, anthracite, coke and coke braize, and sawmill refuse as fuels in gas producers. 2500 w. Jour Assn. of Engng Socs—Aug., 1912. No. 35349 C.

See also Peat Power, under *Combustion Motors.*

Gas Pumps

See same heading, under *Hydraulic Machinery.*

Gas Turbines

The Gas Turbine. Norman Davey. Reviews historical facts relating to steam turbines, and begins a discussion of gas turbines, indicating types possible, and pointing out those likely to give reasonable efficiency; the difficulties are explained and suggestions given. Ills. 3000 w. Engr, Lond—March 8, 1912. Serial. 1st part. No. 31261 A.

The Gas Turbine. J. Lange. Trans. from article in *Stahl und Eisen.* Illustrated discussion of types and designs, with remarks on their operation. 2500 w. Power—Feb. 13, 1912. No. 30386.

Note on the Gas-Turbine. Dugald Clerk. Read before the British Assn. Reviews the experimental work of a number of inventors, especially results obtained with the large Holzwarth gas turbine. 2500 w. Engng—Sept 13, 1912. No. 36268 A.

The Gas-Turbine. H. Holzwarth. Abstract translation of a paper read before the Schiffboutechenische Gesellschaft. Also editorial. Illustrated description of an explosion turbine. 3000 w. Engng—Nov. 24, 1911. No. 28667 A.

Die Gasturbine. Hans Holzwarth. Reviews this book, which claims triumph over all difficulties for the Holzwarth turbine. Outlines the construction of the plant, giving test results. Ills. 4000 w. Engr, Lond—Jan. 5, 1912. No. 29681 A.

Holzwarth's Gas Turbine. Drawings and description of the gas turbine designed by H. Holzwarth and E. Junghaus. 1000 w. Mech Engr—July 5, 1912. No. 34468 A.

The Efficiency of the Gas Turbine (Der Wirkungsgrad der Explosions-Gasturbine). Hans Holzwarth. Experimental tests, tabulated and plotted by curves. In two parts. Part I. 1800 w. Zeitschr des Ver deutscher Ing—June 15, 1912. No. 34553 D.

The Efficiency of the Gas Turbine (Zum Wirkungsgrad der Explosionsturbine). A. Stodola. Mathematical and experimental discussion. Ills. 5000 w. Zeitschr des Ver deutscher Ing—June 22, 1912. No. 34557 D.

Gas Turbines (Ueber Gasturbinen). Prof. P. Langer. A description of the construction and mode of operation of the gas-turbine. Ills. 3200 w. Stahl u Eisen —Oct. 19, 1911. No. 28405 D.

An Exhaust Gas Turbine. Illustrated description of the Churchill-Shann exhaust gas turbine, with report of tests. 1700 w. Engr, Lond—Aug. 23, 1912. No. 35760 A.

The Holzwarth Gas Turbine. Illustrates and describes a new type of gas turbine, giving results of investigations. 4000 w. Power—Feb. 6, 1912. No. 30271.

Gaswasher

A Centrifugal Gaswasher. Walther Feld. Illustrated description of this method of purifying and cooling blast-furnace and producer gases, and applications made. 1500 w. Met & Chem Engng—July, 1912. No. 34178 C.

Ignition

Electric Ignition in Internal Combustion Engines. John S. Leese. Discusses the respective claims of the high and low tension systems. 1200 w. Elec Rev, Lond—April 19, 1912. No. 32500 A.

The New Atwater Kent Ignition System With Automatic Spark Advance. Illustrated description of the new type known as model K. 1200 w. Horseless Age—Sept. 11, 1912. No. 35950.

Hot Tube Ignition Engines and Their Manufacture (Over gloeikopmotoren en hun fabricage). J. E. du Celliée Muller. Explains the action of the engines, and reviews practice used by various manufacturers. Ills. 6500 w. De Ingenieur—Aug. 24, 1912. No. 36174 D.

Electric Ignition for Explosive Engines (L'allumage électric des moteurs a explosions). R. Arnoux. Recent practice in the use of electric sparks for internal combustion motors; improvements in magnetos, etc. Ills. 14400 w. Mem Soc Ing Civ de France—June, 1912. No. 36664 G.

Internal-Combustion Engines

The Internal-Combustion Engine in Modern Practice. Robert L. Streeter. This third article of a series deals with the machinery of producer-gas power plants. Ills. 4500 w. Engineering Magazine—Dec., 1911. No. 28389 B.

The Internal-Combustion Engine in Modern Practice. Robert L. Streeter. This fourth article of a series discusses the cost of power generation in small plants. Ills. 3500 w. Engineering Magazine—Jan., 1912. No. 29205 B.

The Internal-Combustion Engine in Modern Practice. Robert L. Streeter. Fifth and last article of a series. Discusses present standards of design and operation in Germany. Ills. 3000 w. Engineering Magazine—Feb., 1912. No. 30023 B.

Internal Combustion Engines for Electrical Installations. Illustrates and describes types. 12000 w. Elec Rev, Lond —April 19, 1912. No. 32502 A.

Theories on Internal Combustion Engines (Théorie des Moteurs a Combustion Interne). Leon Letombe. Especially considering engines of the Diesel type. Diagrams. Serial. 1st part. 4200 w. Tech Mod—May 1, 1912. No. 32769 D.

The Thermal Efficiency of Internal-Combustion Engines. Dugald Clerk. From report of British Science Guild on "National Sources of Energy." Considers that it may be taken as twice as efficient as the steam engine. 1800 w. Mech Engr—April 19, 1912. No. 32488 A.

Lubrication

Lubrication Problems in Gasoline Engines. Theo. M. R. von Kéler. On the methods of determining the suitability of lubricating oils for combustion motors. 2000 w. Sci Am Sup—Aug. 17, 1912. No. 35219.

Maintenance

Gas and Oil Engine Running and Maintenance. Excerpt from a House Office Memorandum giving directions. 2200 w. Mech Wld—July 26, 1912. No. 35159 A.

Motive Powers

Comparison of Gas, Oil and Steam Motive Powers. R. E. Mathot. Gives a comparison of installation costs, labor, fuel, etc. 1400 w. Power—March 5, 1912. No. 31002.

Oil Engines

Internal-Combustion Engine for Heavy Fuel Oils. Illustrated description of an engine, designed by James McKechnie, which, it is claimed, simplifies the construction and reduces the cost of manufacture. 1000 w. Mech Engr—Jan. 12, 1912. No. 29901 A.

What is the Future of the Oil Engine in the United States? G. H. Kimball. Reviews past experience with these engines, comparing types, and discussing features. 2000 w. Eng News—May 30, 1912. No. 33319.

German Progress in Large Oil Engines. F. E. Junge. First of a series of illustrated articles describing the latest achievements of oil-power engineering. 1000 w. Power—Oct. 22, 1912. Serial. 1st part. No. 36948.

Oil Engines for Marine and Land Purposes. C. Lakin-Smith. Presented at the Olympia Oil Industries Exhibition. Considers types of oil engines as applied to general purposes. 5000 w. Mech Engr—Sept. 12, 1912. No. 36257 A.

Heavy Oil Engines. H. Riall Sankey. Deals principally with the Diesel engine, as being the most important of this class. Ills. 4500 w. Jour Soc of Arts—Oct. 4, 1912. Serial. 1st part. No. 36816 A.

The Semi-Diesel Heavy Oil Engine. J. Rendell Wilson. Illustrated account of how it has been developed and put into practical use. 2500 w. Marine Rev—Oct., 1912. No. 36813 C.

Some Impressions of Continental Marine Diesel Engine Practice. The present article describes engines mostly of the two-cycle type, following briefly the cycle of operations. Ills. 2000 w. Engr, Lond—Dec. 8, 1911. Serial. 1st part. No. 29058 A.

Diesel Engines at the Turin Exhibition. Illustrated descriptions of engines constructed by Sulzer Brothers. 2000 w. Engng—March 8, 1912. No. 31259 A.

Experiments on the Utilization of Waste Heat with a Sulzer 300 H. P. Diesel Engine (Versuche an einer Sulzerschen 300 pferdigen Dieselmotorenanlage mit Abwärmeverwertung). J. Cochand and M. Hottinger. Describes apparatus and results of tests. Ills. 3800 w. Zeitschr des Ver deutscher Ing—Mar. 23, 1912. No. 32044 D.

The Junkers Marine Oil-Engine. Plate and illustration, with explanation of the principle of the engine and the general arrangement of machinery for a ship of the Hamburg-American line. 1200 w. Engng—Nov. 24, 1911. No. 28664 A.

The Junkers Oil Engine. F. E. Junge. Illustrated description. 800 w. Power—Jan. 23, 1912. No. 29873.

The "Junkers" Internal Combustion Engine (Le moteur "Junkers" à combustion interne). H. Eric. Description of this engine. Ills. 1800 w. Rev Indus—Dec. 9, 1911. No. 29801 D.

The Junkers Engine. Illustrated description of this high-power oil motor. 1800 w. Sci Am Sup—March 2, 1912. No. 30930.

The Junkers Oil Engine. Joseph B. Baker. Illustrated description of a valveless engine, with two pistons per cylinder, for utilizing cheapest grades of fuel. 1200 w. Ir Age—Aug. 1, 1912. No. 34991 C.

Notes on Two-Cycle Oil Engines. Frank Duncanson. Read before the Inst. of Metals. Discusses the requirements, the disadvantages to be overcome, the advantages claimed, etc., over four-cycle engines. 2000 w. Mech Engr—March 1, 1912. No. 31141 A.

A New Crude Oil Engine. Illustrated description of a new engine working on the two-cycle principle. 2000 w. Engr, Lond—Dec. 1, 1911. No. 28768 A.

Test of a Kerosene Burning Oil Engine. Jasper Raymond Rand. Describes the engine and method of conducting the test. 2000 w. Sib Jour of Engng—Feb., 1912. No. 31442 C.

Oil Engines in a Hungarian Municipal Power Plant. Abstract of a paper by Laszlo Bano, read before the Hungarian Soc. of Engrs. & Archts. of Budapest. Illustrates and describes features of two 300 h. p. engines in the plant at Torda (Hungary). 1700 w. Power. April 16, 1912. No. 31977.

Oil Engines for Central Station Prime Movers. From a paper by Earle D. Jackson, read before the Minn. Elec. Assn. A summary of types, properties and qualifications of available engines. 2000 w. Elec Wld—May 4, 1912. No. 32615.

Test of an 85-H.P. Oil Engine. Forrest M. Towl. Describes a test of a De La Vergne oil engine operating an oil pump, and one of the same engine with the load applied by a prony brake instead of a pump. Ills. 1700 w. Jour Am Soc of Mech Engrs—Nov., 1911. No. 28193 C.

See also Diesel Engines, under *Combustion Motors;* and Diesel Engines and Oil Engines, under MARINE AND NAVAL ENGINEERING.

Paraffin

See Gas Producers, under *Combustion Motors;* and FUELS, under *Automobiles.*

Peat Power

Power from Peat. Illustrated description of a peat gas plant said to be successful. 1000 w. Engr, Lond—Dec. 8, 1911. No. 29060 A.

The Peat Producer Gas Power Plant at the Government Fuel-Testing Station. B. F. Haanel. From the *Jour. of Can. Peat Soc.* Treats of the production of power from peat as shown by investigations made at the Fuel Testing Station. Ills. 2500 w. Can Engr—May 2, 1912. No. 32631.

Pistons

Gas Engine Pistons (La Motrice a vapore a stantuffo). Description of their operation in the Franco Tosi engines. Ills. 2100 w. Industria—Dec. 24, 1911. No. 29814 D.

Posen Exhibition

Heat Motors at the 1911 Posen Exhibition (Die Wärmekraftmaschinen auf der Ostdeutschen Ausstellung Posen 1911). H. Baer. Description of some of the steam engines, steam turbines, and combustion engines at the exhibition. Ills. 4400 w. Zeitschr d Ver Deutscher Ing—Nov. 25, 1911. No. 28816 D.

Preheating

The Effect of Water Vapor in Promoting Combustion. Reviews a paper by James A. King, read before the Am. Soc. of Agri. Engrs., explaining the action. 3000 w. Eng News—March 28, 1912. No. 31634.

Perfecting Internal Combustion Motors by Preheated Air (Perfectionnement des moteurs a combustion interne par le réchauffage préalable de l'air). A. Mouguier. Stating the principles of preheating, and some practical results obtained. Diagrams. Serial. 1st part. 3800 w. Genie Civil—Feb. 24, 1912. No. 31409 D.

Producer Gas

Résumé of Producer-Gas Investigations. R. H. Fernald and C. D. Smith. Report of investigations into the possibility of generating producer gas for power purposes from various fuels, describing plants, and giving much information. Ills. 393 pages. Bureau of Mines—Bul. 13. No. 28220 N.

Producer Gas. J. A. Weil. Abstract of a paper before the Manchester Assn. of Engrs. Discusses what design of plant to adopt. 3000 w. Mech Engr—Dec. 15, 1911. No. 29222 A.

Producer - Gas (Ueber Gaserzeuger). Gwosdz. A description of the plants and operations performed in obtaining producer-gas. Ills. 7700 w. Glückauf—Oct. 7, 1911. No. 28426 D.

The Extraction of By-Products from Producer-Gas Plants (Die Gewinning der Nebenerzeugnisse beim Gaserzeuger-betrieb). A. Gwiggner. Analysis of gases and by-products. 2100 w. Stahl u Eisen—Dec. 21, 1911. No. 29708 D.

Gasification of Inferior Fuels (Vergasung minderwertiger Brennstoffe). Herrn Mann and Uristefeld. Analytical discussion on the availability of inflammable material in gas producers. 3500 w. Glückauf—May 25, 1912. No. 33520 D.

The Utility of Inferior Fuels from the Dortmund Mines (Ausnutzung minderwertiger Brennstoffe auf Zechen des Oberbergamtsbezirks Dortmund). O. Dobbelstein. Describes the test and results on various types of gas producers with a low grade fuel. Ills. 2500 w. Stahl u Eisen—Aug. 1, 1912. No. 36101 D.

The Use of the Hot Waste Gases from Reverbatory Furnaces for Generating Steam (Die Verwertung der heissen Abgase von Flammöfen zur Dampferzeugung). F. Peter. General discussion on the heat available, and detailed outlines on the choice of boiler systems for such plants. Serial. 1st part. 4200 w. Stahl u Eisen—May 16, 1912. No. 33502 D.

Gas-Fired Furnaces and Gas-Power Plants with Chemically Regenerated Flue Gases (Gasfeuerungen und Kraftgasanlagen mit chemischer Regenerierung von Verbrennungsgasen). Herr Gwosdz. General remarks, and description of the Eldred gas-producer process. Ills. 2800 w. Glückauf—June 1, 1912. No. 33551 D.

See also Gas Producers, under *Combustion Motors,* and Canal Tugs, under MARINE AND NAVAL ENGINEERING.

Rating

American Practice in the Rating of Internal Combustion Engines. T. C. Ulbricht and C. E. Torrance. Gives curves and equations, based on an investigation of over 600 different sizes and types of machines, showing average current practice in America. 800 w. Sib Jour of Engng—April, 1912. No. 32406 C.

American Practice in Rating Internal Combustion Engines. T. C. Ulbricht and C. E. Torrance, Jr. Investigations to determine empirical formulæ which would represent average practice of American manufacturers in the rating of gas engines of the stationary type. 1500 w. Power—July 23, 1912. Serial. 1st part. No. 34702.

The Rating of Petrol Engines. Editorial discussing the rating from the point of view of the taxation authorities. 2500 w. Engng—Feb. 2, 1912. No. 30404 A.

Reversing Devices

Reversing Gas and Oil Engines. A. M. Levin. Illustrates and describes a number of methods for making combustion engines reversible. 3500 w. Power—April 2, 1912. No. 31712.

Rotary Valve

Rotary Valves for Explosion Engines. Henry Souther. Explains the theory, design, and construction. Ills. 2000 w. Am Mach—April 25, 1912. No. 32296.

Rotary Distributing Valve for Two-Stroke Internal-Combustion Engines. Illustrates and describes an invention by Alfred A. Scott, designed to insure better running of the engine under throttle and to enable the engine to develop its full power. 1000 w. Mech Engr—May 31, 1912. No. 33454 A.

Silencer

Exhaust Silencer for an Internal-Combustion Engine. Illustrated description of an improvement in the cut-out. 1500 w. Prac Engr—Nov. 24, 1911. No. 28657 A.

Suction Gas

A Few Problems in Bituminous Suction-Gas Plants. Frank Fielden. Discusses the possibility of using cheaper fuel, the need of an intimate mixture of air at a suitable temperature, mechanical feeding, etc. 3500 w. Engng—Feb. 9, 1912. No. 30668 A.

Two-Cycle Engines

Two-Cycle Engines. Robert W. A. Brewer. Considers internal combustion engines, contrasting two-cycle and four-cycle types, and illustrating and describing a number of designs. Plates and Ills. 9500 w. Soc of Engrs—Nov. 6, 1911. No. 28253 N.

Points in the Design of Two-Stroke Cycle Engines. S. M. Howell. Considers the principles of satisfactory design, examples, and changes required for oil engines. Ills. 2500 w. Mach, N Y—Feb., 1912. No. 30125 C.

Investigations on the Working Process of a Two-Cycle Engine (Untersuchung des Arbeitsprozesses eines Zweitaktmotors). H. Scheit and Bobeth. Experiments and results on a Ferro motorboat engine of the two-cycle type. Ills. 5000 w. Zeitschr d Ver deutscher Ing—June 1, 1912. No. 33579 D.

See also Engines, under *Aeronautics* and *Automobiles.*

Valve Setting

Gas Engine Valve Setting. Olaf Olafsen. Information of practical use. 2000 w. Power—Sept. 3, 1912. No. 35713.

HEATING AND COOLING

Air Conditioning

The Production of Oxygen in the Workshop. Aug. S. Neumark. The present number considers the production of oxygen from alkali-chlorates. 1200 w. Met & Chem Engng—Dec., 1911. No. 28588 C.

Rational Psychrometric Formulae. Willis H. Carrier. Their relation to the problems of meteorology and air conditioning. Discusses artificial regulation of atmospheric moisture. Ills. 7800 w. Jour Am Soc of Mech Engrs—Nov., 1911. No. 28192 C.

Temperature and Humidity. Dr. W. A. Evans. Address before the Midland Club. Reviews early investigations on air qualities and effects of humidity on the body. 2500 w. Met Work—May 3, 1912. Serial. 1st part. No. 32535.

Air-Conditioning Apparatus. Willis H. Carrier and Frank L. Busey. Considers the principles governing the application and operation of apparatus used in the control of atmospheric conditions. Ills. 10000 w. Jour Am Soc of Mech Engrs—Dec., 1911. No. 28737 C.

Air-Conditioning Apparatus—Principles Governing Its Application and Operation. Willis H. Carrier and Frank L. Busey. Illustrates and describes apparatus employed and information concerning applications and operation. 900 w. Dom Engng—March 2, 1912. Serial. 1st part. No. 30988.

Air Washers and Humidifiers for Public Buildings, Factories and Mines. Describes systems and apparatus used, explaining benefits. 3000 w. Sci Am Sup—June 8, 1912. No. 33474.

Cooling Air of Buildings by Mechanical Refrigeration. E. F. Tweedy. Explains principles and gives a practical application. 3000 w. Power—Nov. 28, 1911. No. 28370.

Air Cooling in Industrial Works (Le Rafraichissement des Locaux Industriels). Paul Bellon. Reviews the general theoretical conditions to be met. 3600 w. Rev Industrielle—July 20, 1912. No. 36177 D.

Air Delivery

Graphic Method of Figuring Delivery of Air Through Ducts. Burt G. Harrison. Charts, with explanatory notes. 300 w. Heat & Vent Mag—Sept., 1912. No. 36052.

Central Plants

Hot Water Heating for the Central Station. Ira N. Evans. Discusses central station heating for cities and towns, and the requirements of large institutions and manufacturing plants. 4500 w. Power—April 30, 1912. No. 32438.

Combined Central Heating and Electric Plants. Edwin D. Dreyfus. Presents new developments in prime movers, particularly in the steam-turbine field, effecting improvement in efficiency. 2000 w. Power—Aug. 20, 1912. No. 35281.

Analysis of Central Station Steam Heating Rates. A. E. Duram. Suggests a method for the determination of rates based upon the actual cost of the service, plus a fair percentage of profit. 3000 w. Heat & Vent Mag—Sept., 1912. No. 36051.

How to Keep Central Heating Station Records. H. R. Wetherell. Explains records used by the Peoria (Ill.) Gas & Electric Co. 1700 w. Heat & Vent Mag—Sept., 1912. No. 36053.

Wilkes-Barre's District Heating System. Donald M. Belcher. Illustrates and describes the construction and reported cost of installing heat-insulated mains under ground. 2500 w. Eng Rec—Sept. 14, 1912. No. 35940.

Sectional Steam Heating in Chicago. S. Morgan Bushnell. Read before the Nat. Dist. Heat. Assn. An account of the scheme of the Illinois Maintenance Co. for supplying heat, light and power to buildings. 2500 w. Heat & Vent Mag—July, 1912. No. 34631.

The Central Heating Station at the University of Manchester. Illustrated description of a plant for heating a group of buildings. 1200 w. Engng—April 12, 1912. No. 32276 A.

Heating and Ventilating the Northwestern University Buildings. J. M. Stannard. Describes a system of hot-water forced circulation, and direct and indirect steam plants under both vacuum and gravity methods. 1800 w. Am Soc of Heat & Vent Engrs—June, 1912. No. 34746 N.

The Central Heating- and Power-Plant of McGill University, Montreal. Richard John Durley. Describes factors considered in the design, construction and operation of a central heating-plant in a Canadian city where the yearly variation of temperature often exceeds 120 deg. F. Discussion. Plate. 15500 w. Inst of Civ Engrs—No. 3985. No. 37084 N.

Cold Storage

Cold Storage of Furs and Fabrics. E. F. Tweedy. Explains the methods in use, and describes plants and operation. 3000 w. Power—Feb. 20, 1912. No. 30485.

The Preservation of Fresh Eggs by the Lescarde System of Sterilization and Refrigeration (La Conservation des Oeufs Frais par Stérilisation et Réfrigération, Système Lescardé). Henri Blin. Description of the method of treatment by this system. Ills. 3200 w. Génie Civil—May 4, 1912. No. 32780 D.

Combination Heating

Warm-Air and Steam Heating in Church. Illustrates and describes an installation at Malone, N. Y., to meet requirements of a cold climate. 2500 w. Met Work—June 7, 1912. No. 33600.

Congress

The Eighth Heating and Ventilating Congress (Het achtste Congres voor verwarming en ventilatie). J. F. H. Koopman. Report of the proceedings of this assembly in June, 1911. 6500 w. De Ingenieur—Dec. 2, 1911. No. 29769 D.

Dust

Dust in Relation to Heating. Konrad Meier. Considers causes of vitiation and means of prevention, and some unsanitary practices resulting from hot-air systems. 3500 w. Heat & Vent Mag—March, 1912. No. 31562.

Drying

Drying Apparatus. H. C. Russell. From a paper read before the Am. Soc. of Heat & Vent Engs. Calls attention to principles underlying the design of drying apparatus. Also discussion. 3500 w. Heat & Vent Mag—April, 1912. No. 31879.

Electric Heating

Electric Lighting and Heating (L'Éclairage et le Chauffage Électrique). A. Turpain. A brief history of the growth of the use of electricity for these purposes, with a short outline of modern appliances. Ills. 7200 w. Rev Gen des Sciences—Nov. 30, 1911. No. 28887 D.

Electric Heating. Percy Good. Considers methods of heat transference and discusses briefly methods of electric heating. 1500 w. Elec Rev, Lond—Dec. 22, 1911. No. 29450 A.

See also Electric Furnaces, under ELECTRICAL ENGINEERING, *Electro-Chemistry*.

Engineers

The Heating and Ventilating Engineer. J. P. Lisk. Discusses difficulties encountered in the work. 1200 w. Power—Aug. 6, 1912. No. 35071.

Equipment

Heating and Ventilating of Court House. Illustrates and describes details of mechanical equipment used in heating and ventilating this public building at Memphis, Tenn. 1800 w. Met Work—Jan. 19, 1912. No. 29686.

Estimating

Office Practice in Estimating Heating and Ventilation. John D. Small. Gives questions sent out and a summary of the answers. 2000 w. Am Soc of Heat & Vent Engrs—June, 1912. No. 34743 N.

Factories

Special Requirements in Factory Heating. H. C. Russell. Considers methods of meeting particular requirements. 1500 w. Met Work—Jan. 19, 1912. Serial. 1st part. No. 29687.

Factory Heating From Fuel-Saving Angle. William J. Baldwin and Ralph C. Taggart. Discusses important questions to be considered in deciding the general design and arrangement of the heating apparatus. Ills. 4000 w. Ir Age—April 25, 1912. No. 32330 C.

Home Office Regulations of Humidity in Weaving Sheds. Reprint of regulations under the Factory and Workshops Act, to come into force April 1, 1912. 2000 w. Mech Engr—Jan. 19, 1912. No. 30164 A.

Air Heating and Humidifying in Textile Mills (Il calore e l'inumidimento degli ombienti nella lavorazione delle fibre tessili). H. Neu. Discusses the necessary temperature and humidity in textile mills and presents methods for obtaining them. Serial. 1st part. 2100 w. Industria—Jan. 7, 1912. No. 30637 D.

Heating and Ventilating a Large Factory. An account of a large rubber factory heated in winter and cooled in summer by water circulated through Green fan blast heaters. Ills. 1500 w. Ir Age—April 4, 1912. No. 31763 C.

Heating Large Concrete Factory Buildings. Describes the heating and ventilating plant of a rubber mill at Conshohocken, Pa. Ills. 1500 w. Heat & Vent Mag—May, 1912. No. 33090.

Heating and Ventilation of New Bosch Factory. Illustrates and describes the heating and ventilating arrangement for this new factory in Springfield, Mass. 1500 w. Power—May 28, 1912. No. 33158.

Heating and Ventilating of a Mitten Factory. Samuel R. Lewis. Describes the arrangements of air conditioning in a factory in Toledo, Ohio. Ills. 1000 w. Am Soc of Heat & Vent Engrs—June, 1912. No. 34747 N.

Fans

On Fans. Sydney F. Walker. Considers propeller fans and centrifugal fans. Ills. 2500 w. Gas Wld—Aug. 24, 1912. No. 35735 A.

Measurement of Air in Fan Work. Charles H. Treat. Discusses the use of the pitot tube for fan testing with particular emphasis on the correct kind of tube to be used. Ills. 5500 w. Jour Am Soc of Mech Engrs—Sept., 1912. No. 36302 D.

Removal of Refuse and Waste by Fans and Blowers. F. R. Still. A general description of methods successfully applied to industrial plants, and related information. Ills. 4500 w. Am Soc of Heat & Vent Engrs—June, 1912. No. 34748 N.

Federal System

The Federal Heat Unit at Work. Explanation of the Federal System of heating and ventilation, intended for use in connection with warm-air furnaces. 2000 w. Heat & Vent Mag—March, 1912. No. 31561.

Furnaces

Effective Furnace Work Prevented by Law. Explains how provisions of New York building regulations and insurance restrictions prevent good furnace service. Ills. 2500 w. Met Work—Aug. 16, 1912. No. 35212.

Furnaces in Service Fifty Years. Features of an old warm-air furnace heating plant are illustrated and described. 1800 w. Met Work—Oct. 18, 1912. No. 36870.

Ventilation and Rotation in Heating. Angus K. Campbell. Comments on general practices in warm-air furnace heating and the follies of over-ventilation. 2500 w. Met Work—June 14, 1912. No. 33691.

Garage Heating

Heating Private Garages. Briefly considers suitable methods. 1500 w. Horseless Age—Dec. 20, 1911. No. 28921.

Gas Heating

The Use of Power Gas for Heating Purposes. D. R. Wilson. Appendix to the report of the Chief Inspector of Factories and Workshops for the year 1911. Information concerning the purposes for which the gas is used, the plant, etc. 3500 w. Mech Engr—Aug. 2, 1912. No. 35196 A.

Greenhouses

Greenhouse Heating Charts. John A. Payne. Charts and explanatory remarks. 400 w. Heat & Vent Mag—Nov., 1911. Serial. 1st part. No. 28325.

The Hot Water Heating in Highland Park Greenhouse. Harold L. Alt. Illustrated description of an installation in a city building at Rochester, N. Y. 1000 w. Dom Engng—Sept. 21, 1912. No. 36068.

Heat Expansion

Variation of Weight and Heat Content Per Gallon of Water. Sidney D. Kutner. Gives tables and chart using the gallon as the unit. 600 w. Heat & Vent Mag—Jan., 1912. No. 30005.

Loss of Pressure in Blowing Air Through Heater Coils, With New Formula. E. M. Shealy. Gives tests showing the importance of this point in indirect heating work. Ills. 2000 w. Heat & Vent Mag—Nov., 1911. No. 28324.

Heat Problems

Heat Problems. Editorial review of a paper by Sir James Dewar, before the Roy. Inst., giving an account of recent investigations at low temperatures. 1500 w. Engng—Jan. 26, 1912. No. 30319 A.

Coal Required to Heat Modern City Building. E. F. Tweedy. Gives chart and table of mean monthly temperatures in various cities, and methods of estimating the amount of coal required to heat a given building. 4000 w. Power—Jan. 16, 1912. No. 29633.

Rate of Heat Transmission in Indirect Surface Air Heaters. Willis H. Carrier and Frank L. Busey. Gives a new theory of heat convection under forced circulation, with new formula. 2500 w. Heat & Vent Mag—Jan., 1912. No. 30006.

The Time Required to Heat Large Buildings to Normal Temperature. Peter L. Tea. Devises a method by which the amount of radiating surface required to heat a given interior in a given time can be calculated. 2000 w. Heat & Vent Mag—May, 1912. Serial. 1st part. No. 33089.

Time Element in Heating Apparatus. James A. Donnelly. Read before the Am. Soc. of Heat & Vent. Engrs. Calculations and records of observations on time required to bring room temperatures to a given degree. 1500 w. Met Work—May 24, 1912. No. 33039.

Heating Systems

Warm-Air and Hot-Water Heating Compared. Stewart W. Jameson. Address before the Midland Club, Chicago. Compares relative points of merit of two systems of heating under identical conditions. 2500 w. Met Work—Jan. 12, 1912. Serial. 1st part. No. 29540.

Modern Applications of Exhaust Steam by the Combination of Light and Power Plants with Heating Systems (Moderne Abdampfverwertung bei Verbindung von Licht- und Kraftanlagen mit Heizungsanlagen). Max Arbeiter. Examples of such practice and possibilities for development. Ills. 4400 w. Elektrotech u Maschinenbau—April 14, 1912. No. 32733 D.

Heat Transmission

Heat Transmission Through Building Walls of Corrugated Iron. Gives results of tests made at Matteawan, N. Y. Ills. 1500 w. Eng News—Oct. 3, 1912. No. 36577.

Hospitals

Modern Design in Hospital Heating. Clarence W. Williams. Methods discussed before the Am. Hospital Assn., considering only systems applicable to large institutions. 400 w. Heat & Vent Mag—Nov., 1911. Serial. 1st part. No. 28326.

Hospital Heating and Ventilation (Die Heizung und Lüftung von Krankhäusern). E. Meter. Discusses the problem and suggests methods. 1800 w. Zeit d Oest Ing u Arch Ver—Dec. 22, 1911. No. 29752 D.

Heating and Ventilating of Hospital Ward Buildings. Charles L. Hubbard. Considers especially ward buildings of cottage hospitals steam heated from a central plant. Ills. 2500 w. Dom Engng—April 13, 1912. No. 31980.

Hot-Air Heating

Blower Heating in Bank Building. Illustrates and describes details of mechanical equipment, including fuel oil fed heating boiler, air washer, fresh air and exhaust ducts and vacuum cleaning provisions. 2000 w. Met Work—Oct. 4, 1912. No. 36527.

Hotel Plant

Heating and Ventilating System of the Ritz-Carlton Hotel. N. Y. Charles A. Fuller. Brief illustrated description. 2000 w. Power—March 19, 1912. No. 31238.

Hot Water Heating

Auxiliaries for Pressure Systems of Hot Water Heating. J. J. Wilson. Read before the Am. Soc. of Heat. & Vent. Engrs. Drawings and descriptions of methods used to install some of these specialties. 1200 w. Heat & Vent Mag—Feb., 1912. No. 30447.

Auxiliaries for Hot-Water Heating. J. J. Wilson. Read before the Am. Soc. of Heat. and Vent. Engrs. Illustrates and describes devices used to increase pressures to obtain higher temperatures. 1400 w. Met Work—March 8, 1912. No. 31052.

Pressure Hot-Water Heating for House. Illustrates and describes details of a heating system equiped with pressure generating devices. 1500 w. Met Work—Jan. 5, 1912. (Special.) No. 29396 C.

Hot-Water Heating for High Buildings. Ira N. Evans. Describes a hot-water system which may be applied to the highest buildings. Diagrams. 3000 w. Power—Dec. 19, 1911. No. 29030.

Vacuo Hot Water Heating by Forced Circulation. Ira N. Evans. Gives the principal points of the general discussion of the subject of forced hot water heating. 2800 w. Heat & Vent Mag—Feb., 1912. No. 30446.

Hot-Water Heating for Institutions. Ira N. Evans. Discusses the proper way to design a system of this kind. Ills. 3500 w. Power—May 14, 1912. No. 32863.

Regulating the Flow and Return Temperatures in a Large Hot Water Heating System. G. E. Chapman. Gives a schedule which takes into account wind as well as outdoor temperatures. Ills. 1200 w. Heat & Vent Mag—Aug., 1912. No. 35331.

Gas-Heated Hot-Water Supply. Thomas Potterton. Illustrated description of hot-water supply apparatus with thermostatic control. 6500 w. Plumb & Dec—Dec. 1, 1911. No. 28965 A.

Some Types of Furnaces for Heating with Hot Water (Quelques types de chaudières pour le chauffage à l'eau chaude). F. Andrel. Brief review of ten types of furnace systems. Ills. 3000 w. Rev Indus—April 20, 1912. No. 32773 D.

Ice-Making

Central Station Ice Making. H. J. Macintire. Discusses the cheap production of ice by the use of electrically driven compressors. 2000 w. Elec Wld—Aug. 17, 1912. No. 35272.

Technical Analysis of Typical Freezing Tank. Fred Ophuls. Considers some defects in freezing tanks used for ice making, analysis of the time required to freeze ice in artificial plants, etc. Ills. 7000 w. Ice & Refrig—June, 1912. No. 33602 C.

Making Ice with Heat. Frank C. Perkins. Illustrates and describes a type of automatic iceless refrigerator of English design for use in residences and hotels. 2000 w. Sci Am Sup—June 15, 1912. No. 33718.

The Exhaust-Steam Ice-Making Plant in Hempel & Co.'s Municipal Brewery in Stadthagen (Die Abdampf-Eismaschinen-Anlage in der Städtischen Brauerei Hempel & Co. in Stadthagen). Georg Göttsche. Description of plant. Ills. 2700 w. Kälte-Industrie—Jan., 1912. No. 30589 D.

Raw Water Ice Making in Columbus, Ohio. Illustrated description of plant and methods, giving cost. 3000 w. Ice & Refrig—Aug., 1912. No. 34921 C.

See also Central Stations, and Combination Plant, under ELECTRICAL ENGINEERING, *Generating Stations*, and Management, under INDUSTRIAL ECONOMY.

Insulation

Insulation. E. R. Norris. Read before the S-W. Ice Assn. Gives facts concerning insulation, efficiency and construction in connection with the ice business. 2000 w. Ice & Refrig—Dec., 1911. No. 28681 C.

Laboratories

Heating and Ventilating a Large Laboratory. Illustrates and describes details of equipment for providing warm fresh air and exhausting vitiated air in the Sloane Laboratory at New Haven, Conn. 2000 w. Met Work—June 14, 1912. No. 33690.

Municipal Building

Description of Heating and Ventilating for the Municipal Building in New York City. Harold L. Alt. Brief illustrated description of the two-pipe, direct steam heating system and the ventilating systems. 4000 w. Dom Engng—Aug. 3, 1912. No. 34917.

Neutral Zone

Neutral Zone in Heating and Ventilating. L. Biro. Explains the neutral zone and how it is determined in practice; interior conditions and methods of construction to lower or raise the neutral zone. 4000 w. Heat & Vent Mag—June, 1912. No. 34017.

Piping

Heating a Twelve-Story Loft Building. Illustrates and describes details of piping and provisions to care for expansion and contraction. 2200 w. Met Work—Feb. 16, 1912. No. 30449.

Plumbing

Warming and Plumbing House on a Hill. Illustrations, plans and description of windmill water supply, septic tank sewage disposal, and hot-water heating system. 2000 w. Met Work—April 26, 1912. No. 32360.

Plumbing a Modern Apartment House. Illustrates and describes the sanitarian's work in contributing to the comfort and safety of homes. 3000 w. Met Work—July 26, 1912. No. 34783.

Plumbing in Hotel Taft in New Haven. Illustrated description of sanitary engineering in providing for filtered water supply and waste disposal for a large hotel. 3000 w. Met Work—Dec. 15, 1911. No. 28968.

Plumbing in a Municipal Laundry and Bath. Illustrates and describes the provisions for water supply and drainage. 1500 w. Met Work—March 1, 1912. No. 30932.

Precooling

Fruit Handling, Precooling and Storage Investigations. A. V. Stubenrauch. Read before the Am. Warehousemen's Assn. Deals with results of special investigations. 2500 w. Ice & Refrig—Jan., 1912. No. 29507 C.

Some Fruit Precooling Problems. A. V. Stubenrauch. Read before the Am. Soc. of Refrig. Engrs. An account of precooling investigations of the Bureau of Plant Industry. 3500 w. Ice & Refrig—Jan., 1912. No. 29506 C.

Precooling Farm Products. Albert Phenis. Explains the successful system reinforcing transportation in refrigerating cars. 1500 w. Mfrs' Rec—July 11, 1912. No. 34386.

San Bernardino Precooling Plant. C. M. Gay. Illustrated description of this large plant for cooling of fruits and other products in refrigerating cars in transportation. 4000 w. Ry Mas Mech—June, 1912. No. 33747 C.

Precooling Plant of Southern Pacific. LeRoy W. Allison. Illustrated description of the plant at Colton, Calif., for cooling perishable fruits, vegetables, etc. 1500 w. Power—June 4, 1912. No. 33423.

Precooling Plant of the Santa Fe Railway. L. R. W. Allison. The plant at San Barnardino, Cal., for the precooling of fruit, using the Gay system. Ills. 3000 w. Power—Nov. 14, 1911. No. 27996.

Radiators

Cast Iron Radiators (Gusseiserne Radiatoren). E. Mueller. States the mode of their introduction into Germany, their application to steam and hot water, and their manufacture. Serial. Part I. 4200 w. Stahl u Eisen—Nov. 30, 1911. No. 28871 D.

Foundry Operations in Making Radiators. Illustrated description of equipment employed and successive operations in producing cast-iron radiators for heating. 2000 w. Met Work—Sept. 27, 1912. No. 36377.

Refrigerator Cars

See same heading, under RAILWAY ENGINEERING, *Motive Power and Equipment.*

Refrigeration

Steel Pipe Versus Iron Pipe in Refrigerating Work. P. De C. Ball. Read before the Am. Soc. of Refrig. Engrs. Information from the writer's experience favoring mild steel pipe. 2500 w. Ice & Refrig—Nov., 1911. No. 27696 C.

The Value of Insulation. Charles H. Herter. Considers the value of insulation in terms of refrigeration saved. 2000 w. Ice & Refrig—March, 1912. No. 31005 C.

Faulty Versus Proper Insulation. C. D. Havenstrite. Read before the W. Ice Mfrs. Assn. Discusses types old and new, considering heat transmission, moisture, and structural strength. 4500 w. Ice & Refrig.—April, 1912. No. 31814 C.

Filtration and Lubrication. H. H. McClintock. Read before the W. Ice Mfrs. Assn. Gives experience at a certain plant, explaining conditions and results accomplished. 1200 w. Ice & Refrig—April, 1912. No. 31815 C.

Standardization of Flanges for Ammonia Refrigeration Equipment. A. M. Howser. Read before the Am. Assn. of Refrig. Discusses points to be considered in adopting a new standard. 1500 w. Power—May 21, 1912. No. 32963.

Economies of Insulation. I. Lundgaard. How to compute the relative economy between increase of insulation or refrigeration. 1000 w. Ice & Refrig—June, 1912. No. 33603 C.

Influence of Suction Pressure on Ammonia Compressors. Robert H. Karl. Abstracts of paper before the Inst. of Oper. Engrs., N. Y. Shows that the suction pressure greatly affects the capacity. 1200 w. Power—Sept. 24, 1912. No. 36243.

Advantage of Operating Ammonia Compressors by Aid of Thermometers. E. N. Friedmann. Presidential address before the Am. Soc. of Refrig. Engrs. Short discussion. 4000 w. Ice & Refrig—Nov., 1911. No. 27694 C.

Problems Encountered in the Designing and Construction of an Ammonia Compression Test Plant. Van Rensselaer H. Greene. Read before the Am. Soc. of Refrig. Engrs. Diagrams and discussion of a complete test plant for conducting scientific tests upon refrigerating appliances. 3000 w. Ice & Refrig—Nov., 1911. No. 27695 C.

Ammonia Absorption Refrigerating System. Fred Ophuls. Outlines sketch and description. 5000 w. Power—April 23, 1912. No. 32247.

Indicating the Ammonia Compressor. John Green. How to take and interpret the diagrams. 2000 w. Power—Oct. 22, 1912. No. 36949.

Electricity in Ice Plants. Aug. C. Smith. Considers the plate system and the can system, giving results that show that electric power can be successfully applied. Ills. 2500 w. Sci Am Sup—Nov. 25, 1911. No. 28282.

Electrical Refrigeration for Florists. R. L. Lloyd. Illustrates and describes the arrangements. 1500 w. Elec Rev & W Elect'n—May 4, 1912. No. 32601.

Electric Refrigeration in the Ice-cream Business. Illustrated description of motor-driven refrigerating machines, comparing this method with old methods. 2000 w. Elec Rev & W Elect'n—May 25, 1912. No. 33085.

Central Refrigerating Plants at Atlanta, Ga. R. C. Turner. Brief illustrated description. 1000 w. Power—May 7, 1912. No. 32643.

Automatic Refrigeration an Ideal Central Station Load. Porter L. Swift. Shows it to be a profitable field for the extension of electric service. 1200 w. Power—July 2, 1912. No. 34150.

Marine Refrigeration. John Creen. Considers refrigerating problems on shipboard, refrigerants used, typical marine installations, etc. 2500 w. Ice & Refrig —Feb., 1912. No. 30259 C.

Marine Refrigeration Problems. John Green. Considers difficulties encountered in refrigeration on board ships, and how ammunition holds are cooled and ventilated. 2500 w. Ice & Refrig—Aug., 1912. No. 34922 C.

The Present Status of Refrigeration (Lo stato attuale dell'industria del freddo). U. Bordoni. Description of methods employed in recent practice. Ills. 15000 w. Ann della Soc d'Ing e d Arch Ital—Aug. 16, 1911. No. 28478 E.

The Science and Industry of Refrigeration (La scienza e l'industria del freddo). G. Q. Ruata. Treating of the theory of refrigeration and the operation of refrigerating plants. Serial. 1st part. 2400 w. Industria—Feb. 4, 1912. No. 30639 D.

The Future Outlook for the Refrigeration Industry (L'Avenir de l'Industrie du Froid). M. L. Rey. Abstracts from paper read before the *Societé des Ingénieurs civils de France*, presenting causes for further improvement in refrigeration. 4000 w. Rev d'Econ Indus—Mar. 20, 1912. No. 32074 D.

The Cryogenic Laboratory at Leyden. G. Bresch. Illustrated description of a plant for low temperature research. 1500 w. Sci Am Sup—Aug. 10, 1912. No. 35109.

The Power Required for Refrigeration. John J. Smith. Considers means of determining the power required for stated conditions, and shows the application of thermodynamics to this subject. 2500 w. Met & Chem Engng—Oct., 1912. No. 36523 C.

Means for Accumulating Refrigeration. Charles H. Herter. Considers means available for storing up refrigeration, particularly in large storage rooms where the temperature must be kept nearly uniform. 2500 w. Power—July 30, 1912. Serial. 1st part. No. 34594.

The Refrigerated-Meat Industry of South America. Illustrated description of the new "Cuatreros" refrigerated-meat plant at Bahia Blanca and a report of the industry. 1800 w. Engng—Dec. 22, 1911. No. 29470 A.

A Modern All-Raw Water Can Ice-making Plant. Illustrated description of a Chicago plant, electrically operated. 1500 w. Ice & Refrig—Oct., 1912. No. 36521 C.

Hygienic Ice Company's New Ice Plant. Illustrated detailed description of a new plant in Chicago. 3000 w. Ice & Refrig —Jan., 1912. No. 29505 C.

Refrigeration Plant for Dry Air Blast. James Gayley. Illustrated description of later methods of applying the two-stage system which are more economical in construction and operation. 800 w. Ir Age —Jan. 4, 1912. (Special.) No. 29330 D.

Statler Hotel Plumbing and Refrigerating System. Illustrates and describes work at this new hotel in Cleveland, Ohio. 1500 w. Dom Engng—Oct. 26, 1912. No. 37039.

See also Cold Storage, under *Heating and Cooling;* Corrosion, under *Materials of Construction*, and Refrigerating Plants, under MARINE AND NAVAL ENGINEERING.

Schools

The Heating and Ventilating of School Houses. Charles L. Hubbard. Discusses details of various systems and their application. 3000 w. Dom Engng—Sept. 7, 1912. Serial. 1st part. No. 35816.

The Heating and Ventilation of Schools. Charles L. Hubbard. The present article deals with buildings of eight rooms and less, employing furnaces or indirect steam heat. 3000 w. Br Build—Jan., 1912. Serial. 1st part. No. 30196 D.

Practical Schoolhouse Heating. Charles L. Hubbard. These articles describe devices for increasing the effectiveness of warm air furnaces, steam boilers, and indirect heating stacks for schoolhouse work. Ills. 1500 w. Met Work—Jan. 5, 1912. Serial. 1st part. (Special.) No. 29398 C.

Heating and Ventilating of Schools. Conclusions of a special committee of the Am. Soc. of Heat. & Vent. Engrs. on present standards of temperature, air purity, and air currents, with standard form of tests. 3000 w. Met Work— April 26, 1912. No. 32361.

School Heating. Ira N. Evans. Considers systems for heating and ventilating buildings of various sizes. Ills. 5000 w. Power—Nov. 7, 1911. No. 27741.

Heating and Ventilating Southern School. Illustrates and describes details of plant in the High School at Bennettsville, S. C. 1500 w. Met Work—Nov. 24, 1911. No. 28254.

Jersey City High School Power Plant. Warren O. Rogers. Illustrated description of the new steam power plant. All necessary auxiliaries for cleaning, ventilating and heating the school building. 1000 w. Power—Aug. 27, 1912. No. 35438.

Heating and Ventilating Park School, Rutherford, N. J. Charles A. Fuller. Plan and description. 1200 w. Power— July 23, 1912. No. 34703.

Steam Heating

Steam Heating Large Department Stores. Davis S. Boyden. Read before the Am. Soc. of Heat. & Vent. Engrs. Particulars in regard to a heating plant in a Boston store. 2000 w. Power—Feb. 27, 1912. No. 30784.

Steam Heating Large Department Stores. Davis S. Boyden. Read before the Am. Soc. of Heat. & Vent. Engrs. Gives results of tests of heating system in large store to show relation of heating to the electrical requirements. Ills. 2500 w. Met Work—June 28, 1912. No. 34095.

Heating and Ventilation in Post Office at Jersey City, N. J. H. L. Alt. Plans and description of the direct steam heating system, the indirect fresh air system, and the exhaust or foul air removal system. 3500 w. Dom Engng—Oct. 12, 1912. No. 36745.

Heating and Ventilation of a Large Store. Illustrates and describes details of equipment of a store in Memphis, Tenn. 1800 w. Met Work—Oct. 11, 1912. No. 36741.

Theatres

Heating and Ventilation of the Little Theatre. Illustrates and describes methods used to furnish air for 283 persons in practically an hermetically sealed room. 800 w. Heat & Vent Mag—July, 1912. No. 34630.

Turkey

Heating in Turkey. John R. Allen. An account of business conditions, and the methods of heating. Ills. 2000 w. Am Soc of Heat & Vent Engrs—June, 1912. No. 34742 N.

University Plant

Heating and Ventilating the Northwestern University Buildings. J. M. Stannard. Describes a system of hot-water forced circulation, and direct and indirect steam plants under both vacuum and gravity methods under installation. 1500 w. Dom Engng—Aug. 24, 1912. No. 35411.

Vacuum

The Production of Vacuum and Some of Its Applications (Etude sur la Production du Vide et Certaines de ses Applications). M. Leblanc. Especially dealing with refrigeration. Ills. and plate. 14700 w. Mem Soc Ing Civ de France—Nov., 1911. No. 30593 D.

Vacuum Heating

Vacuum Heating Practice—A Discussion. I. Are Pumps Needed to Circulate Steam in Heating Systems? J. M. Robb. II. The Use of Pumps in Vacuum Steam Heating Systems. Preston Daniels. 3000 w. Heat & Vent Mag—Jan., 1912. No. 30004.

The Fallacy of the Application of Thermostatic Radiator Return Valves to Mechanical Systems of Vacuum Heating. J. M. Robb. Considers the futility of the application of the thermostatic principle, radiator return valves. 2000 w. Dom Engng—Jan. 6, 1912. No. 29400.

Some Points Involving Mechanism and Advantages of Vacuum Steam Heating. J. W. Hook. Explains the principle and describes vacuum systems. 1500 w. Dom Engng—Dec. 2, 1911. No. 28618.

Air-Line Vacuum Heating for Dwellings. Illustrates and describes an application of this system in connection with low pressure steam heating for residence work. 1200 w. Met Work—March 1, 1912. No. 30933.

Vapor Heating

Vapor Heating of Historic Church. Describes provisions for supplying direct and indirect radiators from boilers in adjoining parish house. Ills. 2500 w. Met Work—Jan. 5, 1912. (Special.) No. 29397 C.

Ventilation

The Influence of Ozone in Ventilation. Leonard Hill and Martin Flack. Discusses the supposed existence of organic chemical poisons in air, showing them to be usually harmless, and their effect due to smell. Reports experiments and considers the general principles of heating and ventilating. Discussion. 6500 w. Jour Soc of Arts—Feb. 9, 1912. No. 30476 A.

The Influence of Ozone in Ventilation. Leonard Hill and Martin Flack. Investigations seem to show its principal function to be that of a deodorizer. 5000 w. Sci Am Sup—June 1, 1912. No. 33288.

Health and Ventilation. Leonard Hill. Extracts from the presidential address to the Physiological Section of the British Assn. Corrects some erroneous ideas, explaining the causes of symptoms wrongly attributed to impure air. 3500 w. Jour Roy Soc of Arts—Sept. 20, 1912. No. 36476 A.

The Physics of Air in Relation to Ventilation. A Saxon Snell. Read before the Roy. San. Inst. Cong. Considers the simple laws that govern the movement of the air, suggesting that the best ventilation is secured by making the fullest use of them. Discussion. 2500 w. Surveyor—Aug. 30, 1912. No. 35880 A.

Late Ideas on Ventilation. W. W. Macon. Remarks on the results of the open air schools, and the reasons. Discussion. 5500 w. Pro Brooklyn Engrs' Club—Jan., 1912. No. 35486 N.

The Natural Ventilating Standard. Konrad Meier. Gives suggestions for meeting hygienic requirements. 2500 w. Heat & Vent Mag—Oct., 1912. No. 36974.

A New Method for the Natural Ventilation of Habitations (Nouvelle Méthode d'Aération naturelle des Habitations). A. Knapen. Reviews the necessity of air conditioning and describes the differential system of aeration. Ills. 8800 w. Mem Soc Ing Civ de France—June, 1912. No. 36663 G.

Air Passage in Ventilation Pipes (Sur l'Ecoulemant de l'Air dans les Conduites de Ventilateurs). Ch. Reignier. Studies on the compression of air in forced ventilation. Ills. and Diagrams. 4000 w. Technique Moderne—Feb. 15, 1912. No. 31395 D.

Dust in Portland Cement Plants. Otto Schott. Describes dust-eliminating devices and methods. 5000 w. Cement & Engng News—Feb., 1912. No. 30820.

Modern Ventilation, Dust Removal and Hot Air Heating in Foundries (Neuzeitliche Lüftungs-Entstaubungs- und Lüftheizungs-Anlagen in Giessereibetrieben). E. Danneberg. Describes fans and other devices for foundry work. Ills. 8000 w. Giesserei Zeitung—Jan. 1, 1912. No. 30571 D.

Humidity and Ventilation in Cotton-Weaving Sheds. Reports results of the committee appointed to investigate conditions and report on means for improving them. 5500 w. Engng—Jan. 12, 1912. No. 29906 A.

Ventilation of Office Buildings. Charles L. Hubbard. Outline of principles for general application and description of ventilating system in a Boston tall office building. Ills. 1500 w. Met Work—March 15, 1912. Serial. 1st part. No. 31200.

Ventilation as Observed by a City Health Department. M. T. Stevens. An account of conditions found in various buildings. 2000 w. Heat & Vent Mag—May, 1912. No. 33091.

Ventilation Problems in Hospitals and Schools. W. Gilman Thompson. Discusses when mechanical ventilation systems are desirable, methods of studying the fitness of the air for respiration, etc. 2500 w. Heat & Vent Mag—May, 1912. Serial. 1st part. No. 33088.

School Ventilation Improvement. Discusses the wrongs of present practice and suggests changes. 2000 w. Met Work—Nov. 17, 1911. No. 28104.

Closed or Open Windows with Mechanical Ventilation. Ralph C. Taggart. Read before the Am. Soc. of Heat. & Vent. Engrs. Does not think open windows should interfere with the ventilating system. 3000 w. Dom Engng—Sept. 14, 1912. No. 35958.

Ventilating Equipment of a Laundry. Illustrates and describes arrangements for the removal of moisture-laden air and the supply of fresh air. 2500 w. Met Work—April 12, 1912. No. 31918.

Ventilation of Restaurants. Charles L. Hubbard. Considers ventilation of the dining-room and kitchen. Ills. 1000 w. Dom Engng—June 1, 1912. No. 33391.

Ventilation of a Dispensary Building. A. M. Feldman. Illustrates and describes methods used for the new dispensary building attached to the Lebanon Hospital, New York City. 600 w. Am Soc of Heat & Vent Engrs—June, 1912. No. 34744 N.

New Ventilating System for the Baltimore Railroad Tunnels. Describes the early ventilating plans, the changes demanded by traffic, and adoption of forced draft from a portal plant. Ills. 2500 w. Eng Rec—Nov. 25, 1911. No. 28287.

Ventilation on the Central London Railway. Describes the general principles of the ozonized air scheme, illustrating the plant used. 1000 w. Engr, London—May 17, 1912. No. 33280 A.

See also Laboratories, and Tunnel Ventilation, under CIVIL ENGINEERING, *Construction;* Ozone, under ELECTRICAL ENGINEERING, *Electro-Chemistry;* Compressed Air, and Ventilation, under MARINE AND NAVAL ENGINEERING; Air Conditioning, and Steam Heating, under *Heating and Cooling*, and Ventilation, under MINING AND METALLURGY, *Coal and Coke*, and *Mining.*

Warehouse Heating

Warming an Extended Produce Warehouse. Illustrates and describes the two double-piping systems to facilitate temperature control at 40 degrees in a building 1021 feet long. 1500 w. Met Work—Jan. 5, 1912. (Special.) No. 29395.

Warm-Air Heating

Heating of Mansion by Five Furnaces. Illustrated description of a warm-air heating system in a large country residence. 1500 w. Met Work—Jan. 5, 1912. (Special.) No. 29399 C.

Water Coolers

Modern Water Coolers for Factories. Illustrates and describes types of re-cooling plants used in Germany. 1500 w. Sci Am Sup—Feb. 3, 1912. No. 30208.

Water Heaters

Keeping Modern Water Heaters in Repair. Illustrates and describes details of automatic and instantaneous gas water heaters, with principles to be observed in their installation, maintenance and repair. 3500 w. Met Work—July 12, 1912. No. 34395.

The Problem of Electrically Heating Domestic Water Supply. W. R. Cooper. Brief description of a domestic water heater in which part of the water is heated directly by electric energy and the remainder is heated indirectly from the first part. 1500 w. Elect'n, Lond—June 21, 1912. No. 34209 A.

HYDRAULIC MACHINERY

Air Lift

Properties of the Air Lift Pump—Its Advantages and Disadvantages. G. J. Davis and C. R. Weidner. Abstract of *Bul.* 450, *Univ. of Wis.* Illustrates and describes its structural features, an air lift pumping plant, and discusses its usefulness. 4500 w. Engng & Con—Feb. 14, 1912. No. 30425.

An Investigation of the Air Lift Pump. George Jacob Davis and Carl Robert Weidner. Describes and discusses investigations made for the purpose of supplying reliable data, from tests on pumps of commercial size and of various types. Ills. 167 pages. Bul Univ of Wis—No. 450. No. 31289 N.

Raising Water by Compressed Air. Frank Richards. Considers the direct-acting pump and its deficiencies and related matters. The next number will describe two types of air lift system. 2000 w. Power—May 14, 1912. No. 32860

The Air Lift. Frank Richards. Explains the principle of operation and details. 2800 w. Compressed Air—May, 1912. No. 33092.

Compressed Air for Raising Water. Frank Richards. Discusses this use of compressed air, giving a table of static water potentials and related information. 2000 w. Compressed Air—July, 1912. No. 34300.

Pumping by Compressed Air. Herbert T. Abrams. Illustrated discussion of each of the four methods of using compressed air for lifting water. 2500 w. Sch of Mines Qr—April, 1912. No. 32160 D.

Automatic Pumps

Automatic Water Supply Booster. C. A. Tupper. Illustrates and describes an interesting auxiliary plant in Germany. 1200 w. Eng News—Feb. 8, 1912. No. 30358.

Centrifugal Pumps

Notes on the Design of Impellers of Modern Centrifugal Pumps. N. W. Akimoff. Considers the layout of the curve giving the correct shape; also the inlet tips of the vanes. Diagrams. 1200 w. Pro Engrs' Club of Phila—Oct., 1911. No. 27630 D.

Load Characteristics of Centrifugal Pumps. Maxwell W. Day. Shows the necessity for care in the selection of a centrifugal pump for various services. 3000 w. Gen Elec Rev—Sept., 1912. No. 35673 C.

Theoretical Estimates of a Centrifugal Pump on the Basis of Experiments (Theoretische Berechnung einer Schleuderpumpe auf Grund von Versuchen). H. C. A. Ludewig. Mathematical discussion of the various types of such pumps. 3200 w. Serial. Part I. Die Turbine—Oct. 5, 1911. No. 28449 D.

Tests of Centrifugal Pumps. Considers results of tests on a number of pumps, made by B. P. Fleming and J. B. Stoneking at the New Mexico Experiment Station. 2500 w. Can Engr—Dec. 21, 1911. No. 28914.

Steam Turbine Driven Centrifugal Pumps at Evansville. Illustrates and describes the low-lift pumps to serve new rapid filters and high-lift unit for reserve. 2000 w. Eng Rec—Aug. 17, 1912. No. 35248.

The Sulzer High Pressure Centrifugal Pump for Fire Trucks (Sulzersche Hochdruck-Zentrifugalpumpen für Feurlöschzwecke). Description of new type of fire-engine pump operated by the automobile motor. Ills. 4500 w. Zeit d Mitt Motorwagen Ver—July 15, 1912. No. 35547 D.

Recent Successes and Failures in the Construction of Centrifugal Pumps (Betrachtungen über bemerkenswerte neuere Konstruktionen sowie Versuchsergebnisse von Zentrifugalpumpen). Emil Gutmann. Description of some recent designs. Ills. Serial. 1st part. 2000 w. Zeit f d Ges Turbinenwesen—July 10, 1912. No. 35562 D.

New Type of Centrifugal Pump. Illustrated description of the Returbo design. 2500 w. Marine Rev—Sept., 1912. No. 35954 C.

See also Pumps, and Turbine-Pumps, under *Hydraulic Machinery.*

Electric Pumping

Hydroelectric Energy for Irrigation. Illustrated description of the Minidoka, Idaho, federal project which utilizes 10,000 h.p. for electric pumping. 2500 w. Elec Wld—Dec. 30, 1911. No. 29248.

Flush Valves

The Flush Valve and Its Application. Harold L. Alt. Gives a brief illustrated description of the two general styles of flush valves and explains where it should, and where it should not be used. 2000 w. Dom Engng—Aug. 24, 1912. No. 35410.

Gas Pumps

Gas Pumps (Les Pompes à Gaz). L. Berland. A description of the Humphrey Gas Pump. 8800 w. Bull Sci d Assoc d'Elèves—Oct., 1911. No. 28507 D.

Theory and Calculations of the Humphrey Gas-Pump (Theorie und Berechnung der Humphreygaspumpe). H. Lorenz. Mathematical discussion of the utility of this pump. 4500 w. Zeitschr d Ver Deutscher Ing—Nov. 4, 1911. No. 28811 D.

Gas-Pumps and Compressors (Gaspumpen und Kompressoren). Dierfeld. Description of the Humphrey pump and its various fields of utility. Serial. 1st part. Ills. 4000 w. Elek Kraft u Bahnen—Nov. 24, 1911. No. 28835 D.

Headgates

See same heading under CIVIL ENGINEERING, *Water Supply.*

Hydraulic Forge

The One-Cylinder Hydraulic Forge (Ueber die reinhydraulischen einstufigen Schmiedepressen). Wenzel Macka. The hydraulic press adapted to forge work. Ills. 1st part. 6000 w. Oest Zeit f Berg- u Hüttenwesen. 28407 D.

Hydraulic Intensifier

Design of a Hydraulic Intensifier. J. B. Varela. Explains a simple method of calculating the dimensions of the different details. Ills. 1800 w. Mach, N Y—Sept., 1912. No. 35665 C.

Hydraulic Jacks

The Care and Repair of Hydraulic Jacks. Arthur J. Humphrey. Describes the principle upon which all types of jacks work and the methods of repairing. Ills. No. 31676 C.

The Hydraulic Jack. An account of its invention, construction, and maintenance. Ills. 2000 w. Ry & Loc Engng—June, 1912. No. 33400 C.

Hydraulic Presses

The Elements of Press Design. O. S. Beyer. First of a series of articles giving formulae, tables, and curves regarding energy storing devices, press capacity, and strength of parts. 3500 w. Am Mach—Oct. 17, 1912. Serial. 1st part. No. 36808.

Designing a Hydraulic Accumulator. W. E. Morey. Considers the designing of a hydraulic accumulator intended to serve a given number of presses. 2500 w. Mach, N Y—Dec., 1911. No. 28543 C.

See also Dies, under *Machine Works and Foundries.*

Hydraulic Principles

Hydraulics in Theory and Practice. W. M. Wallace. First of a series of articles presenting the plain principles of the subject. 2000 w. Prac Engr—Sept. 19, 1912. Serial. 1st part. No. 36486 A.

Hydraulic Ram

The Blasius Theory of a New Hydraulic Ram for Large Volumes of Water. Carl F. Dietz. Presents the work of Blasius, as published in *Glaser's Ann. für Gewerbe und Bauwesen.* Ills. 3000 w. Stevens Ind—Jan, 1912. No. 33024 D.

The Hydraulic Ram: Its Possibilities of Development and Use. Stirling B. Hill. Abstract of paper before the Pacific N-W. Soc. of Engrs. Describes the essential features and operation, discussing its efficiency, limitations and possibilities. Ills. 6000 w. Can Engr—May 23, 1912. No. 33145.

The Hydraulic Ram—Its Possibilities of Development and Use. Stirling B. Hill. Abstract of a paper read before the Pacific N. W. Soc. of Engrs. Deals with the physical features of the ram, its commercial uses, and its possibilities of development. 6000 w. Engng & Con—Jan. 3, 1912. No. 29880.

Hydrodynamics

The Conversion of Kinetic to Pressure Energy in the Flow of Water Through Passages Having Divergent Boundaries. A. H. Gibson. Deals with results of experimental work in so far as it is likely to affect hydraulic design. 1800 w. Engng—Feb. 16, 1912. No. 30795 A.

The Law of Comparison for Surface Friction and Eddy-Making Resistances in Fluids. T. E. Stanton. Read before the Inst. of Nav. Archts. Refers to the law of surface friction as discovered by Osborne Reynolds, discussing its application to hydraulic resistance determinations in turbines. 1800 w. Engng—March 29, 1912. No. 31894 A.

Experiments to Determine the Pressure and Centre of Pressure on Perpendicular Plates when Towed Directly or Obliquely through Water (Untersuchungen über den Druck und Druckmittelpunkt an lotrechten Platten, die recht- und spitzwinklig zur Fahrtrichtung durch Wasser geschleppt werden). Franz Matthias. With special reference to pressure on the rudders of air and water craft. Ills. Serial. 1st part.

5600 w. Schiffbau—Jan. 10, 1912. No. 30585 D.

Hydraulic Pressure Regulation (Hydraulische Druckregulatoren). R. Dubs and A. Utard. Presenting the theory of such regulation and describing various regulators. Serial. 1st part. 3500 w. Schweiz Bau—Jan. 6, 1912. No. 30541 D.

The Laws of Energy in Circulating Fluids (Der Energiesatz der kreisenden Flüssigkeit). Ragnar Liljeblad. Treating of the lines of flow in streams and pipes, by mathematical formulae. Discussion by Prof. Bánki. Ills. 6000 w. Zeitschr des Ver deutscher Ing—Sept. 14, 1912. No. 36626 D.

Theories on Fluid Resistance (Theorieen des Flüssigkeitswiderstand). F. Pfeiffer. A study of the laws of aerodynamics and hydrodynamics as applied to the propulsion of air and water craft. Diagrams. Serial. 1st part. 2000 w. Zeit f d ges Turbinenwesen—June 10, 1912. No. 34536 D.

Pipe Flow

Calculating the Flow of Water in Pipes. T. W. Holloway. Gives general formulae with illustrative examples. 2500 w. Power—June 4, 1912. No. 33420.

Resonance Indications in the Suction Pipes of Compressors and Gas Motors (Resonanzerscheinungen in der Saugleitung von Kompressoren und Gasmotoren). P. Voissel. Mathematical and graphical discussion on efficiency determinations from sound in the pipes. Ills. 3000 w. Zeitschr d Ver deutscher Ing—May 4, 1912. No. 33571 D.

Experiments on the Visual Appearance of Water Currents in Suction Pipes. (Versuche über die Sichtbarmachung der Strömungserscheinungen im Saugrohr). Viktor Kaplan. Attempts to obtain in crystalline form the appearance of water at the moment suction is applied. Ills. 2200 w. Die Turbine—Aug. 20, 1912. No. 36148 D.

Pipe-Line Surges

Waves in Long Hydraulic Pipes and Tunnels. Robert H. Smith. Describes conditions at the works on the Lontsch River, Switzerland, with abstract of a paper by Dr. Franz Prásil in *Schweizer Bauzeitung*, giving a full investigation of the problem. Ills. 3500 w. Engr, Lond—March 15, 1912. No. 31531 A.

Pumping Costs

See Evanston, Ill., under CIVIL ENGINEERING, *Water Supply*.

Pumping Engines

Pumping Engines for the War Department. General view, drawing, and brief description of compound tandem steam pumping engines. 250 w. Engr, Lond—Dec. 29, 1911. No. 29626 A.

Efficiency of Motor Pumping Engines. George W. Booth. Deductions from tests, showing a comparison between the performance of various makes of apparatus. 1800 w. Ins Engng—Oct., 1912. No. 37120 C.

Pumping Plants

The Wilmette Pumping Station. Illustrated description of an electric pumping plant in Illinois. 1500 w. Elec Rev & W Elect'n—Dec. 23, 1911. No. 28903.

Report of a Duty Trial on the Six Million Gallon Pumping Engine at the High-Level Pumping Station of the Toronto Waterworks. Diagram. 3000 w. Can Engr—Dec. 14, 1911. No. 29025.

The New Pumping Installation of the City of Evansville, Ind. Describes the high-duty steam-turbine-driven centrifugal pumps recently installed. 1500 w. Eng News—Sept. 12, 1912. No. 35922.

New Roseland Pumping Station. Edward K. Hammond. Illustrates and describes this new Chicago station and its equipment. 1000 w. Power—Oct. 8, 1912. No. 36700.

High Service Producer Gas Pumping Station at Reading, Pa. Emil L. Nuebling. Illustrated description of the plant with statement of its performance. 1000 w. Eng Rec—Oct. 26, 1912. No. 37007.

See also Irrigation, and Pumping Stations, under CIVIL ENGINEERING, *Water Supply*.

Pumping Tests

Tests of Pumping Engines and Auxiliary Machinery in the New Water Filtration Pumping Station, New Orleans, La. L. E. Strothman. Gives results of very thorough tests of apparatus. Ills. 4500 w. Engng & Con—May 29, 1912. No. 33308.

Pumping Engine Tests: New Orleans Filtration Pumping Station. L. E. Strothman. Report of tests, with related information. 1500 w. Eng News—Aug. 1, 1912. No. 35049.

Pumps

The Hydropulsator. Carl Frederick Dietz. Free translation of a paper read by Dr. F. C. Schulz, before the Hamburg branch of the *Ver Deut., Ing.* Illustrates and describes this newly developed type of hydraulic pump, its possibilities, and some applications. 6000 w. Stevens Ind—Oct., 1911. No. 30002 D.

The Abraham Hydropulsator (L'idropulsator Abraham). F. Giordano. Description and application of this pump. Ills. 2100 w. L'Industria—Mar. 17, 1912. No. 32310 D.

The Hydropulsator (Der Hydropulsor). Ernst Preger. Description of the mechanical operation of the Abraham pump, operating on turbine principles. Ills. 2800 w. Glückauf—July 13, 1912. No. 35510 D.

The Stereophagus Pump. Illustrated description of a centrifugal pump designed to deal with unscreened sewage. 1600 w. Engng—April 5, 1912. No. 31994 A.

The Delphin Pump and Its Uses (Das Delphinpumpwerk und seine Anwendung). Paul Kurgass. Description of this self-operating pump and its commercial possibilities. Ills. 3800 w. Zeitschr. der Ver deutscher Ing — Mar. 16, 1912. No. 32043 D.

An Uncommon Type of Pump. Brief illustrated description of a horizontal treble ram-pump. 250 w. Engr., Lond—May 3, 1912. No. 32893 A.

The Humphrey Pump and Compressor. William Young. Deals with the subject from the broad point of view, omitting all details as to type of valves and valve gear, except to illustrate the kind of devices found suitable. 2500 w. Can Engr—Dec. 21, 1911. No. 28915.

Theory and Computations on the Tesla Centrifugal Discs (Theorie und Berechnung der Tesla-Kreiselräder). H. Lorenz. Calculations on the propulsive force of the recently invented Tesla turbine pumps. Ills. Serial. 1st part. 1600 w. Zeit f d Ges Turbinenwesen—Feb. 29, 1912. No. 31308 D.

A New Type of Centrifugal Pump for Low Heads at Steam Turbine Speeds. Charles A. Carpenter. Illustrated description of the Kerr centrifugal pump, with results of tests. 1000 w. Eng News—June 6, 1912. No. 33489.

Tests on a Stepped Plunger Pump (Versuche an einer Stufenkolbenpumpe). Fritz L. Richter. Tables and efficiency curves on the operation of a differential pump under various conditions. Ills. 5000 w. Glückauf—Aug. 3, 1912. No. 36117 D.

The Variable Speed Drive for Centrifugal Pumps. Charles A. Carpenter. Aims to show that constant speed is not conducive to the best economy. 1000 w. Eng Rec—June 8, 1912. No. 33621.

Centrifugal Pumps for Condensers. Richard L. Strobridge. Discusses characteristics and operating requirements of circulating, hot-well and tail pumps including a consideration of priming and sealing. 1500 w. Power—Oct. 1, 1912. No. 36425.

A Centrifugal Pump for Unscreened Sewage. Brief illustrated description of the Parsons "stereophagus" motor driven pump. 600 w. Eng News—March 14, 1912. No. 31185.

Two New 18,000,000-Gallon Units in New York's 98th Street Pumping Station. E. F. Walker. Doubling the pumping capacity without interfering with the delivery of water. Ills. 1500 w. Eng Rec—March 9, 1912. No. 31087.

Canalization of Waste Waters by Centrifugal Pumps (Canalisation des eaux d'égout par pompes centrifuges). Ed. Henry. Description of the Stéreophagus system utilizing the Parsons turbine. Ills. 3000 w. Rev. Industrielle—Mar. 23, 1912. No. 32301 D.

Rebuilding Three Large Pumping Engines. Charles B. Buerger. A description of reconstruction work for the Philadelphia Bureau of Water. Ills. 5000 w. Pro Am Soc of Civ Engrs—Feb., 1912. No. 30902 F.

See also Hydraulic Transmission, under *Automobiles*, and Air Lift under *Hydraulic Machinery*.

Pump Slip

Methods of Testing Pumps for Slippage, and a Diagram for Pump Slippage. W. G. Kirchoffer. Gives facts observed and recorded and an explanation of tests. 2200 w. Engng & Con—Oct. 2, 1912. No. 36472.

Calculations of Pump Slippage. W. G. Kirchoffer. Gives results of tests for slippage on several large pumping engines and a convenient diagram for determining the discharge of a pump with a given slippage. 2000 w. Power—Oct. 8, 1912. No. 36701.

Pump Valves

Apparatus for the Study of Pump Valve Action. Charles I. Corp. Illustrates and describes apparatus for obtaining a record of the valve movement. 1500 w. Wis Engr—Oct., 1912. No. 37027 C.

The Baltimore Sewerage Pump Valve. A. F. Nagle. Gives results of experiments made by the Bethlehem Steel Co. with a small experimental pump to determine the best proportions of the pump valve to be used in the Baltimore sewerage pumping engine. Ills. 4000 w. Jour Am Soc of Mech Engrs—Oct., 1912. No. 37097 D.

Riveting

Hydraulic Riveting. H. J. Hartley. Read before the Am. Boiler Mfrs.' Assn. Discusses hydraulic pressures as applied to riveting. 2000 w. Boiler Maker—April, 1912. No. 31856.

Turbines

The Föttinger Hydrodynamic Machine (Das hydrodynamische Getriebe von Föttinger). H. Hoff. A new type of turbine and report on its power development. Ills. and plate. 4200 w. Stahl u Eisen—Jan. 11, 1912. No. 30503 D.

Computations on the Friction of Liquids in the Inlet and Outlet Pipes and Chambers in Turbines and Pumps and Its Effect Upon Efficiency (Die Berechnung der Flüssigkeitsreibung in Saugrohren, Düsen und Zellen von Turbinen und Pumpen und deren Einfluss auf den Wirkungsgrad). Victor Kaplan. Mathematical discussion with diagrams. Serial. 1st part. 1600 w. Zeit f d Ges Turbinenwesen—Feb. 29, 1912. No. 31309 D.

Hydraulic Turbines for the White River Plant. Arnold Pfau. Illustrated description of units for a delivery of 18000 h. p. under a head of 440 ft. and able to supply 20,400 h. p. under a 480 ft. head, installed near Tacoma, Wash. 3000 w. Eng Rec—April 20, 1912. No. 32198.

The Largest Hydraulic Turbines in the World. Arnold Pfau. Illustrates and describes the principal features of the hydraulic equipment of the White River plant, and states the reason for their adoption. 4500 w. Eng News—April 18, 1912. No. 32211.

Dimensions of Turbine Intake Pipes (Die Dimensionierung von Turbinenrohrleitungen). J. Magg. Diagrammatic studies of the proper size for intake pipes from the reservoir to the plant. Ills. 3000 w. Die Turbine—Mar. 20, 1912. No. 32001 D.

The Highest Practical Rotary Speed of Francis Turbines (Die erreichbare höchste spezifische Drehzahl von Francisturbinen). G. Reindl. Mathematical discussion with aid of diagrams. 2000 w. Zeit f d ges Turbinenwesen — Mar. 10, 1912. No. 32003 D.

Modern Hydraulic Turbine Practice. Illustrates and describes some new types. 1200 w. Sci Am Sup—May 25, 1912. No. 33049.

Some High Power Hydraulic Turbines. H. B. Taylor. Illustrated description of the 9000 and 22500 h. p. units for the Washington Water Power Co. 2000 w. Eng Rec—May 25, 1912. No. 33074.

Ljungström Radial Flow Turbine. Illustrated description of this turbine which employs only moving blades. 800 w. Power—Oct. 15, 1912. No. 36801.

See also same heading, under STEAM ENGINEERING.

Turbine Blades

The Moments of the Water Pressure on the Revolving Blades of Centripetal Francis Turbines (Die Wasserdruckmomente der Drehschaufeln von Zentripetal-Francis-Turbinen). R. Camerer. Discusses the theory, presents experiments and shows graphical methods. Ills. 7200 w. Zeit des Ver Deutscher Ing—Dec. 2, 1911. No. 29758 D.

Turbine Design

The Strength of Rotating Discs. Discusses this problem in connection with the design of turbine wheels. 2500 w. Engng—Aug. 30, 1912. No. 35885 A.

Turbine Efficiency

Rational Load Alteration in Hydraulic Turbines (Die rationelle Belastungsänderung moderner Wasserturbinen). Hugo Marschner. Mathematical determinations of efficiency under variable loads. Ills. 8500 w. Die Turbine—Sept. 20, 1912. No. 36641 D.

Turbine Governing

The Influence of Bored-Out Feed Piping Upon Turbine Regulation (Der Einfluss geschlossener Wasserzuleitungen auf die Turbinenregelung). D. Thoma. Mathematical discussion. 3200 w. Die Turbine—March 5, 1912. No. 31347 D.

When Will a Regulator Work Invariably (Wann wird ein Regulator schwankungslos arbeiten)? Albert Hoeppener. Mathematical treatise aiming to work out an elimination of oscillations in turbine regulators. Diagrams. Serial. 1st part. 2800 w. Die Turbine—Feb. 5, 1912. No. 31304 D.

Application and Explanation of Brake Tests on Water Turbines from Camerer's Diagram (Beitrag zur Nachrechnung und Auslegung von Bremsversuchen an Wasserturbinen nach dem Diagramm von Prof. Dr. Camerer). Otto Böhm. Results of tests of varying nature to determine correctness of the diagram. Ills. Serial. 1st part. 2800 w. Zeit f d Ges Turbinenwesen—Jan. 10, 1912. No. 30580 D.

Devices for the Proper Control of Turbine Velocity under Various Conditions (Untersuchung über das allgemeine Verhalten des Geschwindigkeitskoeffizienten von Leitvorrichtungen des praktischen Dampfturbinenbaues bei verschiedenen Betriebsbedingungen). P. Christlein. Notes and experiments. Ills. Serial. 1st part. 3000 w. Zeit f d Ges Turbinenwesen—Jan. 10, 1912. No. 30579 D.

New Turbine Regulators Made by Briegler, Hansen & Co., Gotha (Die neuen Turbinenregler von Briegler, Hansen & Co. in Gotha). Herr Thoma. Describes principles and construction of regulators.

Ills. Serial. 1st part. 6000 w. Zeitschr des Ver deutscher Ing—Jan. 27, 1912. No. 30569 D.

The Working Properties of Modern Hydraulic Turbines (Ueber die Betriebseigenschaften moderner Wasserturbinen). H. Kröner. Extended discussion on the characteristics and mathematical principles of turbine operation. Ills. Serial. 1st part. 5000 w. Turbine—Sept. 5, 1912. No. 36640 D.

Turbine Nozzles

The Efficiency of Nozzles and Guide-Blades. Reviews results of tests made by Dr. Paul Christlein on types corresponding to patterns commonly used. Ills. 700 w. Engng—July 19, 1912. No. 34897 A.

Criticism on Flow Conditions in Nozzles and Distributors (Zur kritik der Stromungsvorgänge in Düsen und Leitapparaten). G. Zerkowitz. Exceptions to the theories advanced by Stodola, Christlein, and others, with the theories of the author. Diagrams. Serial. 1st part. 3500 w. Zeit f d Ges Turbinenwesen—Sept. 10, 1912. No. 36642 D.

Turbine-Pumps

The Evolution and Present Development of the Turbine-Pump. Edward Hopkinson and Alan E. L. Charlton. Considers the development of the Osborne-Reynolds pump, believed to be the original type. Ills. 4500 w. Inst of Mech Engrs—Jan. 19, 1912. No. 30317 N.

The Commercial Economy of Turbine Pumps. F. zur Nedden and H. B. Maxwell. Read before the S. African Inst. of Engrs. Explains the theory of turbine pumps and shows, by examples, the application to practical problems. Ills. 3000 w. Mech Engr—Sept. 13, 1912. Serial. 1st part. No. 36255 A.

The Commercial Economy of Turbine Pumps. F. zur Nedden and H. B. Maxwell. Read before the S. African Inst. of Engrs. Explains the theory of turbine pumps, and studies its behavior under varying conditions. 5000 w. Ir & Coal Trds Rev—Aug. 30, 1912. Serial. 1st part. No. 35901 A.

High Pressure Turbine Pumps. V. V. Woodward. Briefly traces the development of machines of this design, explaining the use of each detail, and the various types, the advantages, etc. Ills. 7500 w. Pro U S Nav Inst—Sept., 1912. No. 36098 E.

Comparing Turbo-Pumps, Blowers. Charles A. Carpenter. Comparison, by reducing to a basis of unit speeds, for the purpose of selecting the most economical unit. 1000 w. Power—April 30, 1912. No. 32435.

Turbo Pumps in German Water Works. Alfred Gradenwitz. Illustrated description of the water-works at Charlottenburg, equipped with turbo pumps. 2000 w. Power—Sept. 10, 1912. No. 35854.

High-Speed Turbine Pumps. J. W. Rogers. Considers the advantages of the centrifugal over the reciprocating type of pump, the principles on which the centrifugal pump is based, and practical points bearing on the operation. Ills. 3000 w. Cassier's Mag—March, 1912. Serial. 1st part. 31189 B.

Recent Improvements in Turbine Sinking Pumps. Explains difficulties that have been recently overcome or lessened. Ills. 2500 w. Ir & Coal Trds Rev—March 29, 1912. No. 31903 A.

Turbine-Driven Centrifugal Pumps for Water-Works Service. Walter O. Beyer. Abstract of paper before the Am. W-Wks. Assn. Aims to show that the combined fixed charges and operating costs of the rotary pumps compare favorably with those of other types where the price of coal is not excessive. 1800 w. Eng Rec—June 15, 1912. No. 33727.

Turbine Tests

Tests on Pressure Variations in the Inlet Pipes on a Francis Turbine Under Overload Conditions (Versuche über die Druckänderungen in der Rohrleitung eine Francis-Turbinenanlage bei Belastungsänderungen). A. Watzinger and O. Nissen. Description of plant and conditions of overcharge, and the results. Ills. Serial. 1st part. 3300 w. Zeitschr des Ver deutscher Ing—Feb. 10, 1912. No. 31357 D.

Tests on Free Jet Turbines With the Aid of Pitot Tubes (Versuche an Freistrahlturbinen mit Hilfe der Pitotschen Röhre). Abstracts from a paper by Wm. R. Eckart on "The Application of the Pitot Tube to the Testing of Impulse Water-Wheels," delivered before the *Institution of Mechanical Engineers.* Ills. Serial. 1st part. 1600 w. Zeit f d Ges Turbinenwesen—Feb. 10, 1912. No. 31307 D.

Turbo-Machines

Remarks on the Theory of Turbo-Machines (Remarques sur la Theorie des Turbo-Machines). R. Tison. Discusses the several hypotheses for the expression of the fluid energy in turbines, etc. Diagrams. 8000 w. Rev de Mécan—June 30, 1912. No. 34574 E + F.

See also Turbo-Blowers and Turbo-Compressors, under *Power and Transmission.*

Valve Operation

See Valve Control, under ELECTRICAL ENGINEERING, *Power Applications.*

Valves

Flow of Water Through Check Valves. Gives results of tests made to determine the flow under different pressures, and with several sizes of disks and seats. 1100 w. Power—Oct. 1, 1912. No. 36428.

High Pressure Fire Gate Valves. George J. Henry, Jr. Illustrates and describes the new high-pressure gate-valves used in the system to protect San Francisco from fire, and the way in which they were made. Ills. 700 w. Am Mach—Feb. 22, 1912. No. 30689.

Catskill Aqueduct Control Valves. James Owen. Illustrates and describes the construction and operation of the 48-in. needle-valves, with the specifications for the valve materials. 3000 w. Eng News—Feb. 1, 1912. No. 30233.

See also Patterns, under *Machine Elements and Design*, and Castings, under *Machine Works and Foundries.*

Water-Wheels

The Pelton Waterwheel. Explains the principles of construction of the impulse water-wheel, and methods of calculating the power and speed. 1000 w. Mines & Min—Sept., 1912. No. 35698 C.

The Runaway Speed of Water-Wheels and Its Effect on Connected Rotary Machinery. Daniel W. Mead. Explains elementary principles of turbine governing and how the actual runaway speed can be ascertained with any given wheel and under any condition of head. 5000 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34860 F.

See also Water Power, under ELECTRICAL ENGINEERING, *Generating Stations.*

Weirs

A Self-Acting Weir and Flood Gate. Illustrated description of a design by Henry Davey, in the form of a hollow hemi-cylinder supported by trunnions at the center. 700 w Engr, Lond—July 5, 1912. No. 34477 A.

MACHINE ELEMENTS AND DESIGN

Air Compressor Design

See Air Compressors, under *Power and Transmission.*

Balance

Balance of Rotating Masses (Das Auswuchten schnell umlaufender Massen). Fr. Lawaszeck. A mathematical discussion. Serial. 1st part. Ills. 3500 w. Zeit f d ges Turbinenwesen—Oct. 10, 1911. No. 28454 D.

Ball Bearings

Friction; Metal Bearings and Ball Bearings (Over wrijving, lagermetalen en kogellagers). A. Vosmaer. Brief outline of the advantages of the latter over the former. Ills. 5500 w. De Ingenieur—Nov. 18, 1911. No. 28894 D.

The Distribution of Radial Pressures on Ball-Bearings (Die Verteilung des senkrechten Radialdruckes auf die Kugeln eines Kugellagers). Th. Lambeck. Results of experiments in the testing laboratory of the Deutschen Waffen- und Munitionsfabriken. Ills. 2700 w. Zeit d Mitt Motorwagen Ver—Dec. 15, 1911. No. 29738 D.

Causes of Failure in Ball-Bearings. G. F. Barrett. Abstract of paper read before the Inst. of Auto. Engrs. Considers troubles due to faulty design, material, workmanship, mounting, and bad usage. Ills. Serial. 4500 w. Auto Jour—Feb. 10, 1912. No. 30655 A.

The Manufacture of Balls for Ball Bearings. L. B. Winton. Brief description of the stages of manufacture of the steel balls used. 700 w. Yale Sci M—May, 1912. No. 33072 C.

The Manufacture of Steel Balls. E. A. Suverkrop. Illustrates and describes the forging, grinding, lapping and gaging methods used in a factory whose capacity is a million balls per week. 2000 w. Am Mach—May 2, 1912. No. 32523.

Ball Bearings for Heavy Loads. H. Gansslen. Gives results of extensive research work in connection with bearing friction. Discussion. Ills. 5800 w. Jour W Soc of Engrs—Nov., 1911. No. 29068 D.

The Mounting of Ball Bearings. F. H. Poor. Illustrated directions. 1000 w. Mach, N Y—July, 1912. No. 34166 C.

Ball Bearings in Shop Machine Construction (Das Kugellager im Werkzeugmaschinenbau). W. Vorwerck. Details the various parts of machines to which ball-bearings are applicable. Ills. Serial. 1st part. 1800 w. Zeitschr f Werkzeug—June 15, 1912. No. 34512 D.

The Use of Roller and Ball Bearings and Rolls in Machine Tools (Emploi des Roulements et des Coulissements a Billes et a Galets dans les Machines-Outils). P. Gorgen. Describes the relative advantages of these bearings and states where each is of service. Ills. 3500 w. Tech Mod—Oct. 1, 1912. No. 36676 D.

The Skefko-Self-Aligning Ball-Bearing. Illustrated detailed description of an interesting exhibit at Olympia. 1200 w. Engng—Nov. 3, 1911. No. 28032 A.

Band Brake

Design of a Band Brake. T. W. Holloway. Gives formulae applied to an actual case. 1500 w. Am Mach—April 4, 1912. No. 31755.

Bearings

Ball and Roller Bearings for Railway Motors (Kugel- und Rollenlager für Bahnmotoren). Herr Rau. Discussion on the relative advantages of the two. Ills. 1700 w. Elek Kraft u Bahnen—June 24, 1912. No. 34527 D.

Ball and Roller Thrust Bearings. Robert H. Grant. Illustrated review of their development. 3000 w. Mach, N Y—Aug., 1912. No. 34929 C.

Ball and Roller Journal Bearings. Robert H. Grant. Reviews their development from early types and considerations in their design. Ills. 2500 w. Mach, N Y—Sept., 1912. No. 35667 C.

Taking Care of Bearings and Brasses. J. C. Hawkins. Suggestions for various types. 1500 w. Power—Sept. 24, 1912. No 36241.

Charts for Journal Bearings. Axel K. Pedersen. Gives two charts from which the dimensions and factors of design can be obtained. 3000 w. Am Mach—Oct. 10, 1912. No. 36710.

See also Lubrication, under *Power and Transmission.*

Boiler Design

Staying the End-Plates of Lancashire Boilers. J. F. L. Crosland. Illustrates and describes an improved system of staying for the prevention of grooving. 1600 w. Engng—Nov. 17, 1911. No. 28361 A.

Cams

Cam Profiles. Mathematical demonstration of correct propertions. 1000 w. Autocar—Dec. 2, 1911. No. 28752 A.

Design of Tangential Cams. V. I. Moncrieff. Discusses points of importance. 2000 w. Horseless Age—Dec. 20, 1911. No. 28920.

The Design of Automobile Cams. R. A. Niven. Considers cam dimensions and how they are determined to effect proper valve timing. 2500 w. Am Mach—Nov. 30, 1911. No. 28600.

Cam Teeth and Their Replacement (Einige Bemerkungen über Kammwalzen mit bearbeiten zähnen und ihre Herstellung). E. Becker. Notes on the replacement of teeth on worn rolls. Ills. 2250 w. Zeitschr f Werkzeug—Nov. 25, 1911. No. 28832 D.

Economical Making of Weaving Cams. C. S. Cole. A system of laying out and milling peculiar and accurate cams is illustrated and described. 1200 w. Am Mach—Jan. 11, 1912. No. 29534.

Gas Engine Cam Design. C. M. Mohler. A criticism of the existing type and advocating a noiseless type. 1500 w. Am Mach—April 4, 1912. No. 31753.

Cams for Automatic Screw Machines. Explains an effort to produce cams that are efficient and inexpensive. 8000 w. Engr, Lond—Sept. 13, 1912. No. 36274 A.

See also same heading, under *Automobiles.*

Cam-Shafts

Stamp-Battery Cam-Shafts. Charles T. Hutchinson. Discusses the causes of breakage and improvements needed. Ills. 2500 w. Min & Sci Pr—Dec. 16, 1911. No. 29129.

Charts

See same heading, under *Measurement.*

Clutches

The Design of Friction Clutches. F. A. Halsey. Gives charts from which the chief dimensions of such clutches may be quickly obtained. 2000 w. Am Mach—Aug. 8, 1912. No. 35091.

Recent Clutch Designs (Embrayages Recents). G. Richard. A resumé of the various types of clutches on the market. Ills. 40 pages. Rev de Mécan—Nov., 1911. No. 29776 E + F.

Design of Punch and Shear Clutches. Gives formulae and factors of design for the diameters, number of teeth, and depth of teeth. 1500 w. Am Mach—June 20, 1912. No. 33803.

See also same heading, under *Automobiles.*

Couplings

Elétromagnetic Coupling (Elektromagnetísche Kupplung). C. Krügener. Describes the general process in coupling shafts, etc., by this means, with particular examples. Ills. 1800 w. Zeitschr für Werkzeug—Sept. 5, 1912. No. 36639 D.

Crane Design

Influence Lines. H. W. Mellor and A. M. Sims. Shows their application to the various members in designing structures connected with crane-making. Ills. 800 w. Engng—Nov. 24, 1911. No. 28663 A.

Crane Hooks

Experiments on the Distribution of Tension in Crane Hooks (Versuche ueber die Spannungsverteilung in Kranhaken). E. Preuss. Results of tests on hooks of various sizes and materials. Diagrams. 2700 w. Zeit des Ver Deutscher Ing—Dec. 30, 1911. No. 29766.

Cylinders

Two-Stage Air Cylinders. J. William Jones. Gives supplement of curves for solving problems of determining pressures at which work is equal in each cylinder. 1500 w. Supplement. Mach, N Y—Jan., 1912. No. 29285 C.

Dies

An Unusual Perforating Die. M. Martin. Illustrates and describes a die for perforating berry-pans, making 2,977 holes at each stroke of the press. 1300 w. Am Mach—Nov. 9, 1911. No. 27776.

Die for Finishing a Water Pail. M. Martin. Illustrates and describes a novel method for fastening the bottom and wiring the top in one operation. 900 w. Am Mach—Nov. 30, 1911. No. 28604.

Making Dies for Hammering Machines. Chester L. Lucas. Illustrated description of the work at a shop in Providence, R. I. 1800 w. Mach, N Y—Dec., 1911. No. 28539 C.

Draft in Drop Forging Dies. F. J. Badge. Considers allowances for standard draft angles. 1000 w. Am Mach—Dec. 28, 1911. No. 29168.

Dished-Ends

The Strength of Dished-Ends for Steam-Turbines (Die Festigkeit von gewölbten Böden für Dampfturbinen). Herr Fankhauser. Mathematical formulae for determining the strength of dished-heads. Ills. Serial. 1st part. 4000 w. Zeit f d ges Turbinenwesen. Oct. 20, 1911. No. 28456 D.

Drafting

Physical Health and Drafting. Discusses proper posture, light, ventilation, etc. 3500 w. Mach, N Y—Nov., 1911. No. 27598 C.

An Immense Drafting Organization. J. D. Mooney. An illustrated outline of the system of the Gen. Elec. Co. at Schenectady, N. Y. 4500 w. Am Mach—June 13, 1912. No. 33640.

Drills

See same heading, under MINING ENGINEERING, *Mining*.

Filing System

An Efficient Drawing Room System. George W. Meyncke. Describes a group system of filing drawings devoid of card indexes and other commonly used methods. 1200 w. Am Mach—Dec. 21, 1911. No. 29135.

Fire-boxes

The Design of Fire-boxes by Conic Sections (Théorie des Foyers dans les Sections Coniques). F. Pernot. Mathematical discussion on the design of fire-boxes. 4000 w. Anales d l Soc Cien Argentina—Feb., 1911. No. 28510 N.

Flywheels

The Design of Cast Iron Flywheels. F. A. Halsey. A summary of present knowledge and practice. Ills. 1500 w. Am Mach—March 28, 1912. No. 31540.

Notes on Flywheel Effect and Inertia of Large Rotating Masses. 500 w. Prac Engr—May 24, 1912. No. 33450 A.

The Gyrostatic Action of the Flywheel of an Automobile Engine. Barry McNutt. Explains the theory of gyrostatic action and shows that disturbances due to that cause are so small that they may be ignored. Ills. 2500 w. Horseless Age—June 26, 1912. No. 34106.

Selection of Motors and Flywheels. C. R. Riker and S. A. Fletcher. Gives a series of curves by means of which the constants for any ordinary flywheel can be determined. Explains their use and limitations. 5000 w. Am Mach—March 7, 1912. No. 31070.

Erecting a Large Engine Flywheel. F. C. Holly. Specific directions, with illustrations, upon how to unload and erect a flywheel. 1200 w. Power—Dec. 12, 1911. No. 28748.

Gear Charts

A New Gear Chart. C. F. Hetherington. Gives a chart for the rapid solution of gear problems, explaining its use. 900 w. Mach, N Y—Dec., 1911. No. 28541 C.

Chart for Angles of Spiral Gears. Arthur E. Thayer. Gives chart and method of using it for determining the tooth helix angles. 700 w. Am Mach—Sept. 12, 1912. No. 35861.

Logarithmic Chart for Finding the Strength of Gear Teeth. H. T. Millar. Chart based on the Lewis formula. 800 w. Mach, N Y—Oct., 1912. No. 36456 C.

Gear Problems

Solution of Helical Timing Gear Problems Encountered by Automobile Engine Designers. Glenn Muffly. Explains calculations required in changing the camshaft and similar driving gears from the spur to the helical form. 1800 w. Horseless Age—Nov. 29, 1911. No. 28613.

Noisy Gearing. E. A. Vessey and J. A. Seager. Discusses the causes and a method of correct design for its elimination. 5000 w. Mach, N Y—Nov., 1911. No. 27597 C.

Gears

Gear Data for Motor Applications. C. W. Drake. Gives a chart for determining approximate commercial values of pinion diameter, pinion face, diametral pitch, pitch line speed, and torque, with revolutions per minute and h. p. of motor given, with explanations. 1200 w. Elec Jour—June, 1912. No. 34045.

The Evolution of the Link Expansion Gear. Kreutzkopf. Illustrated study of the development. 2500 w. Mech Wld—June 21, 1912. Serial. 1st part. No. 34217 A.

A Discussion of Eccentric Gears. H. B. Heign. 1000 w. Horseless Age—Sept. 11, 1912. No. 35952.

Notes on the Theory of Gears (Notes sur la Théorie des Engrenages). A. R. Garnier. Mathematical discussion on gear design. Ills. 12000 w. Rev de Mecan—Dec. 31, 1912. No. 30601 E + F.

Oscillating Crank-Gear (Die oszillierende Kurbelschleife). W. L. Thele. Calculations on the design of the driving mechanism of small planers. Ills. 4000 w. Zeit f Werkzeug—April 15, 1912. No. 32717 D.

Calculating Gears for Generating Spirals on Hobbing Machines. Glenn Muffly. Develops formula and explains its use. 2000 w. Mach, N Y—Dec., 1911. No. 28545 C.

Proportions of Miter and Bevel Gears. G. W. and S. Lillian Klages. First of a series of tables giving proportions of bevel and miter gears, whereby all the angles and dimensions can be determined. 4000 w. Am Mach—Jan. 4, 1912. Serial. 1st part. No. 29349.

Limits on Gearing. Francis W. Shaw. Discusses center to center distances of shafts and the pitch diameters of gears, and the degree of accuracy necessary to secure interchangeability. 1500 w. Prac Engr—June 7, 1912. No. 33778 A.

Reminiscences of Oscar J. Beale. Luther D. Burlingame. Reviews his career, especially his work in gearing. Ills. 5000 w. Am Mach—June 27, 1912. No. 33955.

Pitch Diameters of Standard Gears. Grandon Gates. Gives table for determining pitch diameter when diametral pitch and the number of teeth are known. 1000 w. Am Mach—July 11, 1912. No. 34346.

All-Geared Heads v. Coned Heads. Explains the disadvantages of the cone head and advantages of the geared type, giving drawings and dimensions. 2500 w. Prac Engr—Aug. 8, 1912. Serial. 1st part. No. 35291 A.

Herringbone Gears with Special Reference to the Wuest System. Percy C. Day. Discusses the principles, action and methods of construction of herringbone gears, contrasting that with spur gear, and gives data about the proportions and strength of Wuest gears, and their applications. Ills. 7000 w. Jour Am Soc of Mech Engrs—Jan., 1912. No. 29929 D.

Processes in the Production of Gears. Walter Betterton. Read before the Birmingham Branch of the Inst of Auto. Engrs. Considers the processes of manufacturing gear-box gears by means of a complete equipment of gauges, tools, jigs, etc., with the object of ensuring interchangeability. Ills. 5000 w. Mech Engr—May 31, 1912. No. 33453 A.

Choice of Cutters for Cutting Bevel Gears. Francis W. Shaw. Considers the principles involved in the choice of cutters. Diagram. 800 w. Mech Wld—July 5, 1912. No. 34469 A.

Gears for Panama Emergency Gates. Illustrates and describes the gearing to be used in operating the emergency gates of the locks, giving report of tests. 3500 w. Am Mach—Aug. 22, 1912. No. 35308.

Machine-Cut Elliptical Gearing. W. A. Field. Describes methods of producing this form of gearing which have proved satisfactory. Ills. 1400 w. Mech Wld—Aug. 16, 1912. No. 35472 A.

Equipment of a Modern Gear Factory. Illustrated description of the plant of the Boston Gear Works, at Norfolk Downs, Mass 1200 w. Ir Age—Aug. 1, 1912. No. 34989 C.

See also Gears, and Hydraulic Transmission, under *Automobiles;* Hobs, Valve Gears, and Worm Gears, under *Machine Elements and Design*, and Gears, under *Machine Works and Foundries.*

Gear Teeth

The Hammer Test for Gear Teeth. Frank Burgess. Illustrates and describes a gear-testing machine and methods of testing. 2000 w. Am Mach—Jan. 18, 1912. No. 29649.

Gyroscopes

Gyroscopic Effects (Effets Gyroscopiques). G. Clauzel. A study of the fundamental principles of the gyroscope, and considerations for its practical utility. Diagrams. Serial. 1st part. 14400 w. Rev de Mécanique—Jan., 1912. No. 31391 E + F.

See also Compasses, under MARINE AND NAVAL ENGINEERING.

Hobs

Hobs for Spur and Spiral Gears. John Edgar. Discusses hobs for cutting teeth in spur and spiral gears, and defects caused by eccentricity and variation in hob teeth, etc. 2500 w. Mach, N Y—July, 1912. No. 34157 C.

Joints

General Definition of the Ellipse of Elasticity in Joints (Définition générale de l'ellipse d'élasticité des systèmes articulés). B. Mayor. Mathematical discussion. Serial. 1st part. 2400 w. Bull Tech d l Suisse Romande—Dec. 10, 1911. No. 29787 D.

Levers

The Design of Levers. E. N. Weaver. Gives methods of calculating the gross sections necessary for control lever, with charts for finding dimensions of sections quickly. 2200 w. Horseless Age—Jan. 31, 1912. (Special.) No. 30243 C.

Lifting Bails

The Design of Large Lifting Bails. Axel K. Pedersen. Gives an approximate method sufficiently close for practical purposes. 2000 w. Am Mach—May 23, 1912. No. 33009.

Lubrication

Oiling of Machine Parts (La lubrification des organes mécaniques). A. Delalay. The relative advantages of mineral oil, grease, graphite, vegetable and lard oils, and mixtures of oil and grease. 2400 w. Rev d Econ Indust—Nov., 1911. No. 28868 D.

Machine Design

How Machines Are Designed. Frederick P. Glosh. Outlines method used by writer. 2000 w. Am Mach—Dec. 21, 1911. No. 29136.

The Factor of Thrusts in Machine Design. Will O. Wynne. Discusses arrangements for counteracting the thrust of one member by that of another, urging more consideration of this subject. Ills. 1500 w. Mach, N Y—May, 1912. No. 32519 C.

Machine Tools

Rational Machine Tool Design. J. T. Nicolson. Preface to a series of articles aiming to show that careful study of design from the theoretical side can be of assistance to the designer, and may improve the commercial efficiency. 1500 w. Prac Engr—Feb. 16, 1912. Serial. 1st part. No. 30792 A.

See also same heading, under *Machine Works and Foundries.*

Mandrels

Construction and Uses of Mandrels. Lucian Haas. Illustrated descriptions of various designs. 2000 w. Am Mach—Jan. 11, 1912. No. 29529.

Mill Rolls

The Compressive Energy of Mill Rolls (Walzarbeit und Walzdruck). Prof. M. Herrmann. A theoretic determination of the amount of compression in the rolls. Ills. 3800 w. Stahl u Eisen—Oct. 19, 1911. No. 28406 D.

Patterns

First Principles of Pattern-Making. T. R. Schofield. Read before the British Found. Assn. Outlines the principles on which the work of pattern-making is based, giving examples of British pattern construction. 5000 w. Castings—Sept., 1912. No. 36010.

Patternmaking Economics and Developments. T. R. Schofield. Read before the British Found. Assn. Considers the pattern as the molder's tool, and discusses the necessity for accuracy in construction. 5500 w. Foundry—Sept., 1912. No. 35704.

Trade School Pattern Making. G. S. Clarkson. An account of the methods used in teaching pattern making. 1500 w. Am Mach—July 4, 1912. No. 34202.

Pattern Making (Aus der Modellschlossereipraxis). O. Schmidt. Presents the view of making models of furnace parts from sheet iron in place of wood. Serial. 1st part. 1000 w. Giesserei-Zeit—Nov. 1, 1911. No. 28806 D.

Pattern-Making. T. R. Schofield. Read before the British Found. Assn. Outlines the principles on which the work of the pattern-maker is based, as modified by modern engineering and foundry developments. 4500 w. Mech Engr—Aug. 16, 1912. No. 35471 A.

A Storage for a Million Patterns. J. D. Mooney. Illustrates and describes a simple method of storing patterns in floor spaces, racks and bins. 1500 w. Am Mach—June 27, 1912. No. 33954.

Splitting Patterns. Walter J. May. Suggestions from a moulder's point of view. Ills. 700 w. Prac Engr—Feb. 2, 1912. No. 30396 A.

Turning Pattern Work in Halves. Illustrates and describes the usual methods. 600 w. Prac Engr—May 3, 1912. No. 32874 A.

Fillets in Patterns. Illustrates and describes forms of fillets used. 1000 w. Mech Wld—Aug. 16, 1912. No. 35473 A.

The Pattern Maker and the Core-room. Jabez Nall. Illustrated discussion of the relations. 3000 w. Am Mach—April 4, 1912. No. 31759.

Contraction, and the Making of a Pattern for a Preso Table. W. Potter. Illustrated description of method adopted. 1000 w. Mech Wld—Jan. 26, 1912. No. 30309 A.

Plaster Patterns. A short description of methods used in plaster pattern-making. Ills. 1000 w. Mech Wld — March 22, 1912. No. 31724 A.

Gate-Valve Spindle and Hand-Wheel Patterns. F. W. Barrows. Discusses materials, construction, design, etc. Ills. 4500 w. Castings—Feb., 1912. No. 30685.

Design for Gated Metal Patterns. C. Vickers. Illustrates and describes good methods. 2000 w. Foundry—Aug., 1912. No. 34960.

Making Patterns for Cast Sprockets. H. N. Tuttle. Discusses conditions to be met and offers suggestions as to shape of teeth and size, etc. 3000 w. Am Mach—Sept. 5, 1912. No. 35778.

Building an Intricate Burring Machine Pattern. Jabez Noll. Illustrates and describes the development of the model in various stages. 1500 w. Foundry—May, 1912. No. 32562.

See Molding, under *Machine Works and Foundries.*

Piston Rings

Making Piston Rings. C. A. Rogers. Illustrates and describes the method of manufacture. 900 w. Mach, N Y—April, 1912. No. 31675 C.

Propeller Design

Laying Out Propellers. Olaf Malvig. Explains a method which the author has found very satisfactory. Ills. 1000 w. Mach, N Y—Feb., 1912. No. 30123 C.

Pulleys

The Design and Construction of Belt, Rope and Wire-rope Pulleys (Die Berechnung und Construction von Riemen-, Hanfseil- und Drahtseil-Scheiben). Paul Haupt. Specifications of the conditions to be met. Serial. 1st part. 2200 w. Elek Rund—June 6, 1912. No. 34517 D.

See also same heading, under *Power and Transmission.*

Reflectors

Metallic Mirrors. J. A. Seager. Illustrated review of a process for the manufacture of parabolic reflectors made of metal, and capable of being coated with either gold or silver. Their use for searchlights. 1700 w. Brass Wld—Nov., 1911. No. 28249.

Resilience

The Resiliency of Thin Tubes, Especially Elastic Expansion Pipes (Ueber die Formänderung dünnwandiger Rohre, insbesondere federnder Ausgleichrohre). Th. v. Kármán. Mathematical discussion. 5500 w. Zeitschr d Ver Deutscher Ing—Nov. 11, 1911. No. 28813 D.

Roller Bearings

See Ball Bearings, under *Machine Elements and Design.*

Screw Cutting

Calculations for Wheel Motion in Screw-Cutting (Berechnung von Rädergetrieben zum Gewindeschneiden). W. Vorwerck. Presenting tables and formula for determining wheel ratios in screw sizes. Ills. 3500 w. Zeit f Werkzeug—May 15, 1912. No. 33528 D.

Set Screws

Square vs. Hexagon Hollow Set-Screws. John S. Myers. Diagrams, with analysis of stresses, and comparison for wear and strength. 2500 w. Mach, N Y—Oct., 1912. No. 36460 C.

Shafts

Graphical Methods in the Design of Shafts. A. Schein. This first of two papers considers shaft design for two-bearing machines. 2500 w. Gen Elec Rev—March, 1912. Serial. 1st part. No. 30767 C.

Shapers

The Pratt & Whitney Vertical Shaper. E. A. Dixie. Illustrates and describes design combining many desirable features. 1500 w. Am Mach—Dec. 7, 1911. No. 28633.

Special Tools

Combination Designs of Machine Tools. Joseph Horner. Illustrated descriptions of special tools for a variety of work. 4500 w. Cassier's Mag—April, 1912. No. 31834 B.

Spindles

The Evolution of the Flax Spinning Spindle. John Horner. Illustrated review of development, and discussion of the principles of spinning. 5500 w. Inst of Mech Engrs—July, 1912. No. 35204 N.

Springs

Charts for Helical Springs. F. A. Halsey. Gives charts applicable to any material, with explanatory notes. 1000 w. Am Mach—Aug. 15, 1912. No. 35182.

Notes on the Calculation of Spiral Springs (Beitrag zur Berechnung der Schraubenfedern). H. Al. Siebeck. Diagrams, formulae, and tables for determining stresses. 2300 w. Zeit des Ver Deutscher Ing—Dec. 30, 1911. No. 29767 D.

Some Notes on Springs, Principally with Reference to Those for Railway Rolling-Stock. George W. Shearer. A report of investigations and results on springs. Ills. 3000 w. Engng—Feb. 16, 1912. No. 30796 A.

Compression Springs and Materials. R. A. Peebles. Considers the principal sources of error in commercial, helical compressing springs. 2000 w. Am Mach—May 2, 1912. No. 32526.

The Design of Conical Helical Springs. E. R. Morrison. Develops formulae applicable to the various types. Considers only round bar coils. Supplement. 2500 w. Mach, N Y—May, 1912. No. 32517 C.

Stay-Bolt

The Tate Flexible Stay-Bolt. Illustrated description. 1500 w. Engng—Sept. 6, 1912. No. 36001 A.

Taps

Special Tap Making Machinery. Ethan Viall. Gives details of a complete set of tap-making appliances. Ills. 3000 w. Am Mach—Dec. 7, 1911. No. 28686.

Templets

Templets for Marine Engines. On the making and use of templets. Drawings. 2500 w. Mech Wld—Feb. 2, 1912. No. 30398 A.

Tool Costs

Santa Fé Machinery and Tool Costs. E. J. McKernan. Describes tools made, shops, and methods of tool-storage along this railway. Ills. 900 w. Am Mach—Dec. 14, 1911. No. 28948.

Tool Design

See Tools, under *Machine Works and Foundries*.

Toolholders

Toolholders. George W. Burley. Considers the effect of high speed tool steels on the design of holders for cutting tools, illustrating and describing forms. 2500 w. Mech. Wld—April 5, 1912. Serial. 1st part. No. 31915 A.

Universal Joints

See same heading, under *Automobiles*.

Valve Design

A Development of the Zeuner Diagram. Explanation of a new development, applying it to valve design. 1200 w. Prac Engr—July 11, 1912. No. 34611 A.

Valve Gears

Valve Gear Diagrams and the Apparatus for Drawing Them. W. E. Dalby. Diagrams and explanation. 3500 w. Engr, Lond—July 19, 1912. Serial. 1st part. No. 34900 A.

Valves

Vacuum Oscillation Valves. R. S. Willows. Considers the behavior of such valves under different conditions. Diagram. 1200 w. Elect'n, Lond—Dec. 1, 1911. No. 28756 A.

Laying Out a Rotary Air Valve. E. E. Minard. Describes an interesting method of locating the posts in a rotary valve. Ills. 1000 w. Am Mach—Sept. 26, 1912. No. 36221.

See also Valve Setting, under *Combustion Motors*, and Brake Valves, under RAILWAY ENGINEERING, *Motive Power and Equipment*.

Vise Jaws

The Designing of Machine Vise Jaws. Lucian L. Haas. Considers the many different styles of vises, all showing the necessity of rigid construction. Ills. 1200 w. Am Mach—March 7, 1912. No. 31073.

Wire Stresses

An Analysis of the Stresses in Guy Wires. W. M. Wilson. A mathematical demonstration. Discussion. 9000 w. Jour W Soc of Engrs—Oct., 1911. No. 28243 D.

Worm Gear

Investigation of Efficiency of Worm Gearing for Automobile Transmission. William H. Kenerson. Describes a series of tests made to determine the efficiency of three types of worm gearing, and the effect of continuous running. Ills. 1600 w. Jour Am Soc of Mech Engrs—Sept., 1912. No. 36301 D.

End Thrust in Worm Driven Axles. Otto M. Burkhardt. Develops a formula for calculating the end thrusts in the shafts of the worm and the wheel. Diagrams. 1200 w. Horseless Age—Aug. 7, 1912. No. 35088.

Heating and Heat Dissipation in Worm-Gears. B. J. Shillito. Shows that heating of worm-gearing can be predicted from a formula similar to that used to give temperature of electrical machinery, such as field coils. 1800 w. Elect'n, Lond—April 19, 1912. No. 32496 A.

Making Worm-Gears in Great Britain. J. W. Chubb. Drawings and description of English shop practice. 2500 w. Am Mach—May 9, 1912. No. 32663.

MACHINE WORKS AND FOUNDRIES

Accident Prevention

The Prevention of Accidents in Foundries. W. H. Cameron. Read before the Pittsburgh Found. Assn. Reports what has been accomplished by the methods of the Am. Steel Foundries. Ills. 4500 w. Ir Age—April 4, 1912. No. 31767 C.

Suggestions for Preventing Foundry Accidents. W. H. Cameron. From a paper read before the Pittsburgh Found. Assn. An account of methods of the Am. Steel Foundries in solving the problem. 4000 w. Foundry—May, 1912. No. 32558.

Accident Prevention in the Foundries of Germany. Fred W. Scholz. Explains conditions in plants and means taken to prevent trouble. Ills. 2500 w. Castings Aug., 1912. No. 35262.

Museums of Safety and Their Activities. Mancius S. Hutton. Brief history of the movement for the prevention of industrial accidents. 3000 w. Mach, N Y—Sept., 1912. No. 35666 C.

Accident Prevention in Steel Plants. Robert J. Young. Illustrates and describes safeguards used. 8500 w. Ir Age—Jan. 4, 1912. (Special.) No. 29327 D.

Methods of Safeguarding Machine Tools. Illustrations and notes on the prevention of accidents, and the equipment of tools to protect the workmen. 1000 w. Ir Trd Rev—Feb. 22, 1912. No. 30706.

Safety Considerations in Industrial Engineering. David S. Beyer. Discusses problems encountered in endeavoring to provide for accident prevention, particularly in its relation to the science of engineering. Ills. 30000 w. Pro Engrs Soc of W Penn—April, 1912. No. 33119 D.

Accidents in the Machine Shop. Suggestions and rules for ther prevention, collected from various sources. 7500 w. Mach, N Y—Nov., 1911. No. 27593 C.

See also Illumination, under ELECTRICAL ENGINEERING, *Lighting*, and Safety Devices, under *Machine Works and Foundries*.

Accidents

An Analysis of Accidents in a Machine Tool Works. Luther D. Burlingame. A study of records of accidents kept during the last seven years by the Brown & Sharpe Mfg. Co., Providence, R. I. 2000 w. Jour Am Soc of Mech Engrs—July, 1912. No. 34759 D.

Accidents in a Machine Tool Works. Luther D. Burlingame. Analysis of seven years' statistics of the plant of the Brown & Sharpe Mfg. Co. 2000 w. Ir Age—July 11, 1912. No. 34358 C.

Dust Explosions in Factories. From the annual report of the Chief Inspector of Factories, W. S. Smith. Illustrates and describes explosions during 1911. 4000 w. Mech Engr—July 19, 1912. No. 34889 A.

Air Tools

The Use of Compressed Air in Boiler Shops. Thomas Aldcorn. Read before the Am. Boiler Mfrs'. Assn. Considers the production, transmission and use of air and air tools. 5000 w. Boiler Maker —May, 1912. No. 32697.

Aluminum Castings

Use of Green Sand Cores in Aluminum Work. Illustrates and describes methods of making successful aluminum castings. 3500 w. Foundry—April, 1912. No. 31695.

Peculiarities of Aluminum Castings. J. B. Thurman. From *So. Mach.* Information concerning the alloys used, the proper handling and care. 1500 w. Mech Engr —Jan. 26, 1912. No. 30305 A.

Practical Hints on Moulding and Casting Aluminium. From *Foundry Trades Jour.* Hints for moulding, gating and melting. 1600 w. Mech Engr—March 8, 1912. No. 31255 A.

Casting Aluminium. Walter J. May. Explains methods necessary to secure satisfactory work. 1500 w. Prac Engr —March 1, 1912. No. 31139 A.

Annealing

The Annealing of Steel Castings. From an article by Dr. P. Oberhoffer in *Stahl und Eisen.* Describes improvements in physical properties caused by heat treatment. Ills. 1800 w. Ir Age—Oct. 24, 1912. No. 36984 C.

Coarse Crystallization Produced by Annealing Low-Carbon Steel. R. H. Sherry. Outlines results of experiments conducted to investigate this coarse-crystallization phenomenon in low-carbon steel. Ills. 1700 w. Met & Chem Engng—Oct., 1912. No. 36525 C.

Annealing Arrangements in Modern Malleable Iron Foundries. Illustrates and describes recent developments in handling the stacks of pots with castings and scale. 1500 w. Castings—Nov., 1911. No. 28143.

An Automatic Annealing Furnace. Christian F. Meyer. Drawings and description of a furnace in which the intensity of the heat and the duration of the time the work is exposed, can be controlled to give uniform results. 1200 w. Am Mach—June 6, 1912. No. 33436.

The Vaughan-Hughes Method of Annealing Metals Without Oxidation. Illustrated description of the Vaughan-Hughes furnace and its work. 1400 w. Brass Wld—June, 1912. No. 33838.

Open Annealing Furnaces for Tubes and Gas Bottles. Walter J. May. Information concerning such furnaces and their working. 2500 w. Prac Engr—Oct. 27, 1911. No. 27724 A.

Assembling

A Problem in Gang Assembling. H. M. Wilcox. A progressive study of an interesting assembling job in the manufacture of insulator joints. Ills. 2000 w. Am Mach—April 18, 1912. No. 32120.

See also Shop Practice, under *Machine Works and Foundries.*

Automatic Machines

A Semi-Automatic Profiler. Illustrated description of a new automatic profiler for the economical production of gun and pistol parts, cams, etc. 1500 w. Am Mach—Feb. 15, 1912. No. 30420.

Automobile Fish Cleaning Machine. Illustrated description of an ingenious machine called the "Iron Chink." 1500 w. Am Mach—Nov. 30, 1911. No. 28602.

See also Machine Tools, under *Machine Works and Foundries.*

Automatic Valves

Baldwin's Isothermal Control Valve. Illustrated description of a valve of novel construction for automatically controlling the temperature of liquor used in dyeing and for other purposes. 700 w. Engng—July 26, 1912. No. 35165 A.

Boiler Shops

Modern Boiler Shops and How the Same Should Be Equipped. H. C. Meinholtz. Read before the Am. Boiler Mfrs. Assn. Suggestions. 2000 w. Boiler Maker—May, 1912. No. 32801.

The Modern Boiler Shop and Its Equipment. H. C. Meinholtz. Read before the Am. Boiler Mfrs. Assn. Discusses the construction and general arrangement of the buildings, tools and departments. 1200 w. Ir Trd Rev—May 16, 1912. No. 32903.

Boring Machines

Standard Boring Bars and Cutters. Discusses the points to be considered in adopting a standard. Ills. 800 w. Mech Wld—Jan. 5, 1912. Serial. 1st part. No. 29671 A.

Automatic Tire Boring Machine. Illustrated description of a machine used for this work in the German Niles Machine Tool Works. 1200 w. Engr, Lond—Feb. 16, 1912. No. 30804 A.

The Wigglesworth Boring Mill. Illustrates and describes novel constructional details. 1500 w. Ir Age—Feb. 29, 1912. No. 30857 C.

A New Boring Machine for Extra Heavy Work. Illustrated description of a new tool, showing the tendency toward all gear drive and high power. , 1500 w. Ir Trd Rev—Feb. 29. 1912. No. 30945.

The Design of Turning and Boring Mills. Thomas R. Shaw. Describes this type of machine tool and the work it performs, discussing the design. Ills. 3,000 w. Prac Engr—April 19, 1912. Serial. 1st part. No. 32490 A.

Precision Boring Machine. Illustrates and describes details of a horizontal boring, drilling and milling machine and its vertical milling attachment. 2000 w. Ir Age—April 4, 1912. No. 31765 C.

German Radial Boring Machines (Deutshe Radial-Bohrmaschinen) Construction of German machines to compete with those of American make. Ills. 2000 w. Zeit f Werkzeug—Aug. 25, 1912. No. 36147 D.

See also Milling Machines, under *Machine Works and Foundries.*

Brass Founding

The Industrial Melting of Metals by Gas. Particulars of work done in brass foundries where the gas is at an augmental pressure and the air normal. 600 w. Engng—March 1, 1912. No. 31149 A.

The Modern Practice of Brass-founding. H. S. Primrose. Read before the British Found. Assn. Illustrates and describes economic working operations and scentific control. 3000 w. Castings—Sept., 1912. No. 36011.

Modern Brass Founding. H. S. Primrose. Abstract of a paper read before the British Found. Assn. Considers the designing of a brass foundry, its equipment, melting practice and methods. Ills. 3000 w. Mech Engr—Aug. 16, 1912. No. 35470 A.

A Discussion of Modern Brassfounding. H. S. Primrose. Read before the British Found. Assn. Detailed discussion of principles and practice. Ills. 3500 w. Foundry—Sept., 1912. No. 35707.

A Brass Foundry of Modern Appointments. Illustrates and describes a three-story addition to a Philadelphia plant, giving 2,000,000 lb. yearly casting capacity. 1500 w. Ir Age—May 23, 1912. No. 33050 C.

Melting Borings and Wire Brass. Walter J. May. Suggestions for care necessary to avoid waste. 800 w. Mech Wld—March 22, 1912. No. 31725 A.

The Electric Furnace for Brass Melting. G. H. Clamer and Carl Hering. Read before the Am. Inst. of Metals. Presents the advantages of electric furnaces for this work. 5000 w. Brass Wld—Oct., 1912. No. 36966.

Brazing

See Welding, under *Machine Works and Foundries.*

Bronze Founding

The Production of Artistic Bronze Castings. C. Vickers. Discussion of methods of molding and alloys best adapted for the work. Ills. 3500 w. Foundry—Feb., 1912. No. 30133.

Use of Chills in Making Manganese-Bronze and Other Strong Bronze Sand Castings. An explanation of the value of chills in castings and description of methods employed. Ills. 1200 w. Brass Wld—July, 1912. No. 34749.

Casting Works of Art in Bronze. C. Vickers. Illustrates and describes ancient and modern practice. 4000 w. Foundry—Jan., 1912. No. 29302.

Molding Architectural Bronze Castings. C. Vickers. Illustrates and describes intricate work. 1400 w. Foundry—June, 1912. No. 33409.

The History of Bronze Founding in Ancient Times (Die Geschichte der Bronzegiesserei der alten Welt). Hugo Kühl. The use of bronze among the ancients and its composition. Serial. 1st part. 1400 w. Giesserei Zeitung—Feb. 15, 1912. No. 31303 D.

Burnishing

Machine for Burnishing Metal Bars and Tubes, Bliss System (Machine a rétriendre les tiges et tubes métalliques, système Bliss). M. Lunet. Description of recent invention of burnishing lathe. Ills. 2400 w. Génie Civil—Jan. 27, 1912. No. 30622 D.

Cam-Cutting

Cam Cutting Operations in a Big Plant. F. A. Stanley. Illustrates and describes operations in the factory of the United Shoe Mach. Co. 2500 w. Am Mach—Aug. 8, 1912. No. 35089.

Casehardening

New Casehardening Methods. E. F. Lake. Reviews the old methods and describes the new. Ills. 4000 w. Mach, N Y—Feb., 1912. No. 30126 C.

The Case-Hardening of Steel. W. Rosenhain. Brief review of papers by Prof. F. Giollitti, read before the Iron and Steel Institute. Ills. 1200 w. Nature—Nov. 23, 1911. No. 28648 A.

The Theory and Practice of Cementation (Ueber den gegenwärtigen Stand von Theorie und Praxis des Zementationsprozesses). L. Guillet. A summary of the principles employed. Translated from *Le Génie Civil.* Serial. 1st part. 2500 w. Stahl u Eisen—Jan. 11, 1912. No. 30506 D.

Case-Hardening Methods and Mixtures. Notes from a paper by Dr. L. Guillet, published in *Le Genie Civil,* on "The Present Condition of the Theory and Practice of Case-Hardening." 2000 w. Ir Age—April 11, 1912. No. 31931 C.

Case Hardening and Case-Hardening Practice. Robert H. Grant. A review of methods used in the bicycle, automobile building, and allied trades. Ills. 4000 w. Mach, N Y—Oct., 1910. No. 36454 C.

Selective Hardening and Carbonizing. A fire-paint which is impervious to the action of carbon. Ills. 1200 w. Am Mach—Feb. 8, 1912. No. 30279.

Studies on the Gas Liberated by Cements (Étude sur les Gaz dégagés par les Cements). H. de Nolly and L. Veyret. Researches in determining the cause of violent eruptions of inflamable gas produced in course of cementation. Ills. 4500 w. Rev de Métallurgie—Feb., 1912. No. 31392 H.

Case Hardening Iron with Solid Carbon (Sur la Cémentation du Fer par le Carbone Solide). G. Charpy and S. Bonnerot. Results of experiments in the use of amorphous carbon, graphite and diamond. Ills. 5500 w. Rev de Metall—May, 1912. No. 32754 H.

Measurements and Relations of Hardness and Depth of Carbonization in Case-Hardened Steel. Mark A. Ammon. Report of investigations with discussion of results. 2500 w. Bul Am Inst of Min Engrs—Oct., 1912. No. 37132 F.

Time to Heat Up Carburizing Materials. J. H. Nead and J. N. Bourg. Reports experiments on a number of materials in respect to the rapidity of the case-hardening operation. 1000 w. Ir Age—Oct. 17, 1912. No. 36868 C.

A New Process for the Case-Hardening of Steel. Illustrated description of a new furnace of the vertical type. 1500 w. Ir Trd Rev—Nov. 16, 1911. No. 28068.

Castings

Gas Cavities, Shot and Chilled Metal in Iron Castings. Thomas D. West. Expert testimony on their causes and cures. 7000 w. Castings—March, 1912. No. 31273.

Blow-holes, Shot, and Hard Spots in Castings (Ueber das Vorkommen von luftblasen, Schrotkügelchen und harten Stellen in Gussstücken). Thomas D. West. A discussion of the causes tending to the appearance of these defects. Ills. Serial. 1st part. 1800 w. Giesserei-Zeit—Oct. 1, 1911. No. 28418 D.

New Process for Chilling Gray Castings. Thomas D. West. Gives results of a number of experiments for the mechanical production of outside and inside chills in iron castings. Ills. 7000 w. Foundry—June, 1912. No. 33411.

Blowholes in Composition and Bronze Castings and Their Cause and Prevention. 2000 w. Brass Wld—Dec., 1911. No. 28999.

Pellets and Segregation in Iron Castings. E. L. Rhead. Read before the Manchester Sec. of the British Found. Assn. Discusses their effect on the properties of the metal. 2500 w. Mech Engr—Feb. 16, 1912. No. 30794 A.

Perpendicular Streaks in Castings (Seigerungserscheinungen in Gussstücken). B. Osann. Additional remarks to the paper by T. D. West on "Gas Cavities, Shot and Chilled Iron, in Iron Castings." Serial. 1st part. Ills. 2000 w. Stahl u Eisen—Jan. 25, 1912. No. 30511 D.

How to Secure Close-Grained Soft Cast Iron. John Jermain Porter. Read before the Am. Found. Assn. Gives seven practical ways of controlling graphite, grain size and hardness. 1500 w. Ir Age—Sept. 26, 1912. No. 36281 C.

Notes on Chill-Casting. B. A. Harrison. Discusses its methods and scope. 1000 w. Prac Engr—July 25, 1912. Serial. 1st part. No. 35153 A.

The Solidification of an Iron Casting in the Mould. Thomas Turner. Abstract of a lecture before the London Branch of the British Found. Assn. 1000 w. Ir & Coal Trds Rev—Dec. 15, 1911. No. 29198 A.

Charge Mixing; According to Analysis or According to Appearance of Fracture in the Castings (Warum soll mann seine Gusschargen nach Analysen und nicht nach dem Bruchaussehen des Roheseins gattieren?) Pfeiffer. Results of experiments on the proper charge for smelting to obtain the best results. Serial. 1st part. 1500 w. Giesserei-Zeitung—Nov. 15, 1911. No. 28807 D.

The Manufacture of Accurate Soft Metal Castings in Metal Molds, With Note on Making of the Mold. Ills. 1000 w. Brass Wld. April, 1912. No. 32121.

Notes on the Relation in Size and Strength between Test-Pieces and Castings (Betrachtungen über den Zusammenhang der Abmessungen und Festigkeits-Ergebnisse zwischen Probestäben und Gussstücken). J. and L. Treuheit. Including remarks on the variability of test-bars. Ills. 3800 w. Stahl u Eisen—Mar. 28, 1912. No. 32012 D.

Casting Shells with Chilled Points and Similar Work. Walter J. May. Suggestions for such work with drawings. 1500 w. Prac Engr—June 21, 1912. No. 34211 A.

Soft Cores for Tender Castings. Walter J. May. Suggestions for making cores for tender metals and alloys. Ills. 800 w. Prac Engr—Jan. 5, 1912. No. 29668 A.

Repairing Broken Castings. Walter J. May. Gives general directions for the work. Ills. 600 w. Prac Engr—Aug. 29, 1912. No. 35783 A.

Some Castings Troublesome to Run Up Sound. Walter J. May. Illustrates by examples, offering suggestions. Ills. 1000 w. Mech Wld—June 14, 1912. No. 33935 A.

Die Castings. Amasa Trowbridge. A summary of the state of the art of making small castings in steel molds, with related information. Ills. 2500 w. Jour Am Soc of Mech Engrs—Nov., 1911. No. 28197 C.

Casting Steel and Alloys in Vacuum. E. F. Lake. Illustrates and describes the art of die casting. 3500 w. Ir Age—Jan. 11, 1912. No. 29512 C.

Method of Making Dense Die Castings. Ethan Viall. Illustrates and describes details of die-casting machines which produce castings of the same or greater density than the ingot. 2000 w. Am Mach—May 30, 1912. No. 33312.

Making Panama Gate and Valve Parts. Ethan Viall. Illustrates and describes methods used to machine and gage some of the principal castings for these large parts. 1200 w. Am Mach—June 6, 1912. No. 33431.

Making Steel Castings for the Panama Canal. Illustrated description of the Tropenas converter installation at Gorgona. 1000 w. Foundry—Sept., 1912. No. 35703.

Making Steel Castings by the Crucible Process. Illustrated discussion of the molding and melting practice of a large Milwaukee foundry. 5500 w. Foundry—Sept., 1912. No. 35701.

Emergency Casting Equipment. Henry M. Lane. Illustrates and describes emergency work carried out under unfavorable conditions. 6000 w. Am Mach—Dec. 14, 1911. Serial. 1st part. No. 28949.

A New Theory for Testing Castings (Begründung einer neuen Theorie der Gusseisenprüfung). D. A. Messerschmitt. Curves and data resulting from experiments in testing. 3800 w. Stahl u Eisen—Nov. 2, 1911. No. 28800 D.

Casting Under Pressure (Ueber das Giessen von Metallen in Stahlformen unter Druck). Reply to an article by E. F. Lake on the same subject. Serial. 1st part. Ills. 2100 w. Giesserei Zeitung—Nov. 15, 1911. No. 29000 D.

Results of Manganese Bronze Experiments. C. Vickers. Discusses the conditions of molding and casting. 1500 w. Foundry—April, 1912. No. 31696.

Emergency Jobs with Inexpensive Rigging. Describes how large castings were molded and cast at a minimum expense. Ills. 1500 w. Foundry—April, 1912. No. 31693.

Technical Development Shown from the Recovery of Cast Iron Oven Plates (Die technische Entwicklung der Herstellung gusseiserner Ofenplatten). Otto Johnnsen. Illustrating the developments in the science of casting from 16th Century oven plates. Ills. 3800 w. Stahl u Eisen—Feb. 29, 1912. No. 31322 D.

The Exhibition of Old Cast-Iron Plates Considered from the Standpoint of Historic Skill (Die Darstellung auf alten gusseisernen Ofenplatten vom Standpunkte des Kunsthistorikers betrachtet). J. Lasino. Illustrated review showing the early practice in decorative iron castings from the end of the 15th century to later years. 4200 w. Stahl u Eisen—Mar. 28, 1912. No. 32013 D.

Early Ornamental Stove Fronts and Oven Tiles. Reviews two articles recently published in *Stahl und Eisen*, illustrating and describing early examples of the founders' work. 2200 w. Am Found Assn—Vol. XXI. No. 34376 N.

The Manufacture of Malleable Iron Stove Plate. Illustrates and describes methods used in a Wisconsin foundry. 2500 w. Ir Trd Rev—Feb. 8, 1912. No. 30332.

Manufacture of Malleable Iron Stove Plate. Illustrated description of methods pursued in a Wis. foundry. 2000 w. Foundry—Feb., 1912. No. 30136.

See also Chills, Foundries, Foundry Appliances, and Molding, under *Machine Works and Foundries.*

Cement Plants

A Rotary Furnace for Eliminating Powder (Impianti per l'eliminazione della polvere nei forni rotatini). Discussion of a furnace of this type. Ills. 2000 w. Il Cemento—Oct. 30, 1911. No. 28494 E.

Chain Making

Chain-Making Machinery. Illustrated detailed description of methods old and new, the machinery used, improvements, new processes, etc. 5500 w. Ir & Coal Trd Rev—April 5, 1912. No. 32103 A.

An Automatic Chain Welding Machine. Illustrated description. 1200 w. Ir Age —July 11, 1912. No. 34357 C.

Chip Briquettes

The Recovery of Metal Chip Briquettes at the Plant of the High Pressure Briquetting Co., Ltd., Berlin (Brikettieranlagen zur Herstellung von Eisen- und Metallspäne-Briketts der Hochdruckbrikettierung G. m. b. H. in Berlin). J. Mehrtens. Illustrated description of plant and process. 3500 w. Stahl u Eisen—Jan. 25, 1912. No. 30510 D.

The Use of Briquettes for Improving the Quality of Castings (Brikettverwendung zur Herstellung von Qualitätsguss). J. Mehrtens. Results in the use of chip briquettes in a Berlin plant. Ills. 2700 w. Zeit f Werkzeug—May 5, 1912. No. 33527 D.

Iron and Steel Briquettes in Foundry Work (Eisen- und Stahlbriketts im Giessereibetrieb). Hugo Fürth. Discusses the present practice. Serial 1st part. 1600 w. Giesserei Zeitung—Feb. 15, 1912. No. 31301 D.

Chills

Chills for Metal Bedstead Brackets. Illustrates and describes details of chills used in casting rail brackets for large and small posts. 2000 w. Am Mach—May 30, 1912. No. 33314.

Chucks

Double and Quadruple Chucks. E. A. Suverkrop. Illustrates and describes a new line of rotary chucks for use on the Pratt & Whitney surface grinder. 1000 w. Am Mach—Sept. 19, 1912. No. 36013.

Clamps

Several Good Clamping Devices. Illustrates and describes various arrangements. 1000 w. Am Mach—Aug. 29, 1912. No. 35497.

Copper-Clad Steel

Making Copper-Clad Steel Products. Illustrates and describes details of the process used by the Duplex Metals Co. 2500 w. Ir Age—Sept. 12, 1912. No. 35906 C.

Core Boxes

Cores and Core Boxes of a Pipe Fittings Specialty Plant. J. J. Metzgar, Jr. Detailed description of core-room practice in a plant producing large quantities and great variety. Ills. 2000 w. Castings —March, 1912. No. 31272.

Cores

Core Department of the Missouri Malleable Company. Illustrates and describes truck ovens and various cars used, the fuel and firing, conveyance and inspection of cores, etc. 900 w. Castings—Feb., 1912. No. 30684.

Some Apparatus Installed for Core Testing. H. M. Lane. Illustrates and describes an experimental equipment, and gives results thus far disclosed. 1200 w. Castings—July, 1912. No. 34683.

Cupola Charging

Pertinent Suggestions for Cupola Operators. P. Munnoch. Read before the Am. Found. Assn. Discussion of furnace charging, fuel ratios, fluxing, the action of slags, and the melting of steel. 3000 w. Foundry—Feb., 1912. No. 30137.

Transportation Mediums in Foundry Work (Transportmittel im Giessereibetrieb). Martin Pape. This number describes the design and operation of furnace chargers. Ills. Serial. 1st part. 3000 w. Stahl u Eisen—Sept. 26, 1912. No. 36632 D.

Automatic Charging Apparatus for Cupola Furnaces (Automatische Beschickungs-Vorrichtung für Kupolaöfen). J. L. Th. Groneman. Describes stationary and movable conveyors for charging one or more furnaces. Ills. 2500 w. Giess-Zeit—Sept. 15, 1912. No. 36610 D.

Cupolas

Scientific Management of a Foundry Cupola. Edward K. Hammond. Report of tests conducted to ascertain the thermal efficiency of the iron melting furnace. Ills. 5000 w. Foundry—Oct., 1912. No. 36438.

The Cupola—Its Management and Operation. Abstract of a paper by H. Pemberton, before the British Found. Assn. Suggestions. 3500 w. Foundry—Aug., 1912. No. 34959.

Cupola Linings, Fluxes, and Slag. M. Albuetz. Discusses the construction and material of cupola lining, the nature of fluxes, formation of slag, the effect of fluxes on castings, etc. Ills. 2200 w. Prac Engr—May 10, 1912. Serial. 1st part. No. 32974 A.

The Proper Equipment of a Cupola. From *Giesserei Zeitung*. Detailed discussion of features of cupola management. 3000 w. Castings—May, 1912. No. 32968.

Cutters

German Disk Metal Cutting Machines. Hans Heynau. Illustrates and describes a cutting process that accomplishes remarkable results by means of high-speed, toothless rotating disks. 1500 w. Am Mach—Aug. 29, 1912. No. 35494.

A Double Cutting Machine for Torpedo Propeller Blades (Doppelte Fräsmaschine für Torpedo-Schraubenflügel). F. Nickel. Description of machine cutter as designed by J. E. Reinecke, Chemnitz-Gablenz. Ills. 2400 w. Zeitschr des Ver deutschr Ing—June 8, 1912. No. 34550 D.

Setting Double-Angle Fluting Cutters. George W. Burley. Describes a method of setting the fluting mill with respect to the cutter blank without recourse to the use of a rule. Supplement. 1200 w. Mach, N Y—April, 1912. No. 31672 C.

See also Tools, under *Machine Works and Foundries.*

Cutter Sharpening

Sharpening Milling Cutters. F. B. Jacobs. Directions for sharpening and care of cutters. Ills. 3000 w. Mach, N Y—Feb., 1912. No. 30124 C.

Cutting Tools

Sapphire Tools for Cutting Metal. Herbert L. Thompson. Explains how such tools should be ground and used. Ills. 2500 w. Am Mach—Feb. 1, 1912. No. 30118.

Detinning

The Goldschmidt Process of Detinning Scrap. Karl Goldschmidt and Josef Weber. Abstract of patent specification describing a detinning furnace invented by authors. 1500 w. Min & Engng Wld—Dec. 23, 1911. No. 29155.

Dies

The Drawing of Sheet Metal. Joseph M. Stabel. Gives points for the assistance of toolmakers in laying out drawing dies. Ills. 2000 w. Am Mach—Jan. 4, 1912. No. 29351.

Automatic Die-Casting Machines. E. F. Lake. Illustrated, detailed descriptions of types. 3000 w. Mach, N Y—March, 1912. No. 30925 C.

Dies for Plastic Material. Ethan Viall. Describes a cold hobbing process which produces clear, sharp dies from hardened hobs by hydraulic pressure. Ills. 1000 w. Am Mach—Jan. 18, 1912. No. 29648.

Steel Letter Stamping Die. Chester L. Lucas. Shows the principles involved in making flat and round work, illustrating best methods, and outlining the work of cutting the letters. Ills. 2000 w. Mach, N Y—Jan., 1912. No. 29277 C.

Cold Swaging Dies for Steel Parts. D. H. Chason. Describes methods employed and results obtained in accurate work requiring maximum durability at low cost. Ills. 2500 w. Am Mach—Feb. 22, 1912. No. 30686.

Dies for Patent Fasteners. Wilhelm Müller. Illustrated description of German follow-up dies for forming small brass parts complete at each stroke of the press. 600 w. Am Mach—Feb. 29, 1912. No. 30872.

Dies for Raised Letter Name Plates. Chester L. Lucas. Illustrates and describes methods used. 2500 w. Mach, N Y—May, 1912. No. 32522 C.

Force-Making for Embossing Dies. Chester L. Lucas. Explains the term "force" as used in connection with die-sinking, and illustrates and describes their making, the materials used, etc. 3500 w. Mach, N Y—June, 1912. No. 33346 C.

Hydraulic Press Dies. Illustrated description based on a hydraulic press and dies used at the Burnside shops of the Illinois Central R. R. Co. 1000 w. Boiler Maker—July, 1912. No. 34397.

A Sectional Subpress Die. A. W. Van. Describes methods used by a tool maker when building an extremely accurate subpress die. Ills. 1200 w. Am Mach—Sept. 26, 1912. No. 36222.

See also Dies, under *Machine Elements and Designs.*

Drilling

Drilling Deep Holes of Small Diameter. Illustrates and describes method of drilling holes in fairly long shaft, for lubricating purposes. 1500 w. Mech Wld—July 12, 1912. No. 34716 A.

Large and Deep Hole Drilling. George W. Patterson. Illustrates and describes some of the tools and methods used in the Government arsenal at Watertown, Mass. 900 w. Am Mach—Aug. 29, 1912. No. 35496.

Drilling Charts for Iron and Steel. W. T. Sears. Gives two charts, one for cast iron, the others for medium steel, from which can be found the information needed to estimate the power required for drilling with twist drills. 400 w. Am Mach—Sept. 5, 1912. No. 35776.

Gang Drills. Illustrates and describes types and operations. 2000 w. Prac Engr—Aug. 29, 1912. No. 35784 A.

Drilling Machine

Quick-Change-Speed Sensitive Drilling-Machine. Illustrates and describes a machine for high-speed work. 700 w. Engng—Sept. 27, 1912. No. 36729 A.

Modern Radial Drilling Machines. Illustrates and describes a number of machines by various makers. 4500 w. Mech Wld—Jan. 19, 1912. (Supplement.) No. 30168 A.

Design of Vertical Drilling Machines. A. Lewis Jenkins. Develops formulae, showing that design should be based on the relationship of speeds and feeds as well as quantity. 3500 w. Am Mach—Sept. 12, 1912. Serial. 1st part. No. 35860.

Drills

Manufacture of Lincoln-Williams Twist Drills. Chester L. Lucas. Illustrates and describes interesting operations in connection with this work. 2500 w. Mach, N Y—March, 1912. No. 30921 C.

A Remark on the Subject of Twist-Drill Sharpening (Ein Beitrag zum kapitel "Spiralbohrerschleifen"). Hans Volkmann. Notes and diagrams on the theoretical and practical ways of sharpening drills. Ills. Serial. 1st part. 3600 w. Zeitschr f Werkzeugmaschinen und Werkzeuge—March 5, 1912. No. 31349 D.

Design and Maintenance of Rock Drill Bits. Ward Blackburn. Discusses the cutting qualities, and the points of importance in a good bit. 2000 w. Compressed Air—June, 1912. No. 33842.

"American" Full Universal Radial Drill. Illustrated detailed description. 2500 w. Prac Engr—June 14, 1912. No. 33928 A.

The Vauclain Drill. A. C. Vauclain and Henry V. Wille. Illustrates and describes a new type of twist drill which has two radial cutting edges and in which the usual chisel point of such drills is eliminated. 1800 w. Jour Am Soc of Mech Engrs—Oct., 1912. No. 37098 D.

See also Tools, under *Machine Works and Foundries;* and same heading, under MINING AND METALLURGY, *Mining.*

Drying

See same heading, under *Heating and Cooling.*

Drying Blasts

Drying Furnace Blasts With Calcium Carbide. Illustrates and describes a process invented by two French engineers based on the employment of calcium carbide. 1200 w. Sci Am Sup—Nov. 4, 1911. No. 27663.

Dust Extraction

The Methods of Dust Extraction on Cotton-Carding Engines. J. H. Crabtree. Illustrated description of methods and appliances used. 1500 w. Sci Am Sup—Dec. 30, 1911. No. 29176.

Mechanical Appliances for Dust Extraction in Cotton Mills. H. M. Crawford. Illustrates and describes applications of the vacuum principle. 2500 w. Cassier's Mag—Feb., 1912. No. 30284 B.

Mechanical Appliances for Dust Extraction in Cotton Mills. H. M. Crawford. Illustrated description of appliances and Methods of obtaining cleanliness in cotton manufacture and clearing the atmosphere of the card room. 2500 w. Cassier's Mag—Nov, 1911. No. 28182 B.

Electric Furnaces

Engineering Features of Electric Furnaces. Carl Hering. This second article takes up the important principles underlying electric-furnace design and indicates the effect on economy. 4000 w. Engineering Magazine—Feb., 1912. No. 30026 B.

A New Form of Electric Furnaces for Melting Drosses, Brasses, Bronzes, Scrap Metals, Silver and Other Non-Ferrous Metals and Alloys. Illustrated description of the Wile furnaces. 2000 w. Brass Wld—Jan., 1912. No. 29875.

The Electric Steel-Furnace in Foundry Practice. Paul Girod. Describes the construction of the Girod furnace and its operation. Ills. 2200 w. Met & Chem Engng—Oct., 1912. No. 36524 C.

See also same heading, under ELECTRICAL ENGINEERING, *Electro-Chemistry.*

Enameling

Enamels for Sheet-Steel. Robert D. Landrum. Read before the Chemists' Club of Rochester, N. Y. Information concerning materials and methods used. 2200 w. Chem Engr—Oct., 1912. No. 36954 C.

Engraving

Brass Engraving by Machinery. Chester L. Lucas. Illustrated description of an engraving machine and its work. 900 w. Mach, N Y—April, 1912. No. 31671 C.

Etching

Etching and Piercing Metals by the Transfer Process. Briefly describes different processes, and gives illustrated detailed description of the process named. 4500 w. Brass Wld—Jan., 1912. No. 29876.

Extrusion

The Extrusion of Shells and Tubes. Chester L. Lucas. Gives the history of the process, with general outline, describing presses used, metals used, tools, and some examples of extruded work. Ills. 4000 w. Mach, N Y—Nov., 1911. No. 27591 C.

Making Collapsible Tubes by the Extrusion Process. Chester L. Lucas. Illustrated detailed description. 3000 w. Mach, N Y—Dec., 1911. No. 28542 C.

An Experiment in Extrusion. Chester L. Lucas. Outlines an attempt made to apply the extrusion process to the making of wing-nuts and similar articles. Ills. 1200 w. Mach, N Y—June, 1912. No. 33353 C.

The Extrusion of Plastic Metals. Describes the extrusion process, its advantages and applications. Ills. 2000 w. Mach, N Y—July, 1912. No. 34164 C.

Factories

W. T. Henley's Telegraph Works Co.'s Cable Factories, Woolwich and Gravesend. Illustrated detailed description. 3500 w. Elec Rev, Lond—May 17, 1912. No. 33262 A.

See also same heading under CIVIL ENGINEERING, *Construction.*

Feathers

Feathers. James Stormonth. Illustrated discussion of their arrangement, use, and related subject. 1800 w. Mech Wld —June 21, 1912. No. 34216 A.

Files

Manufacturing the Vixin File. Chester L. Lucas. Illustrates and describes methods used in producing a circular cut file. 2500. w. Mach, N Y—Sept., 1912. No. 35670 C.

Fire Protection

Fire-Fighting Appliances for Industrial Plants. F. P. Walther. Considers extinguishers, fire brigades and control of watchmen's service. Ills. 3500 w. Engineering Magazine—Nov., 1912. No. 37115 B.

Fire Protection in Factories. Chester L. Lucas. Illustrated description of the private fire department system of Warner Brothers Co.'s shops at Bridgeport, Conn. 3000 w. Mach, N Y—Nov., 1911. No. 27594 C.

The Factory Fire Brigade and Drills. On the organization and duties of the shop fire brigade. 4500 w. Am Mach—June 27, 1912. No. 33957.

See also same heading under CIVIL ENGINEERING, *Construction.*

Fluxes

The Real Use of Foundry Fluxes. Walter J. May. Information concerning their use and results. 1000 w. Mech Wld—Aug. 9, 1912. No. 35296 A.

Forging

The New Steam-Hydraulic Forging Plant at the New Glasgow Works of the Nova Scotia Steel and Coal Company, Limited. Illustrated description. 2500 w. Can Engr—June 27, 1912. No. 34133.

Automatic Hot Forging Machines. James H. Baker. Discusses the elements which make for success or failure in the design. Ills. 4000 w. Am Mach—Sept. 5, 1912. No. 35775.

Foundries

Statistics of the American Foundry Industry. Information concerning the plants in the United States and Canada casting gray iron, malleable steel, brass and aluminum. Maps. 2000 w. Ir Trd Rev—Aug. 8, 1912. No. 35084.

American Foundries (Amerikanische Giesserei-Einrichtungen). U. Lohse. Selected descriptions of American plants taken from issues of *The Foundry.* Ills. Serial. 1st part. 5500 w. Zeitschr des Ver deutscher Ing—Sept. 21, 1912. No. 36627 D.

American Foundries in the Light of German Criticism. From an address by C. Humperdinck, published in *Stahl und Eisen.* A comparison of practice. 900 w. Castings—June, 1912. No. 33798.

A Modern Brass Foundry and Its Equipment. Describes a plant provided with labor-saving devices for economical operation. Ills. 5000 w. Foundry—Jan., 1912. No. 29301.

A Well-Designed Malleable Iron Foundry. Illustrated description of a plant in Milwaukee, Wis., and its arrangement and equipment. 2000 w. Ir Trd Rev—Nov. 9, 1911. No. 27751.

A Well-Designed Malleable Plant. Illustrated description of a plant at Milwaukee, Wis., its furnace and annealing ovens. 2500 w. Foundry—Nov., 1911. No. 27684.

Description of the Open-Hearth Steel Foundry of the National Brake and Electric Co. Illustrated detailed description of this Milwaukee plant. 5500 w. Ir Trd Rev—Nov. 23, 1911. No. 28256.

A Modern Wisconsin Steel Foundry. H. Cole Estep. Illustrated description of a new Milwaukee plant, equipped with a tilting open-hearth furnace. 5000 w. Foundry—Nov., 1911. No. 27683.

Features of a New Gray Iron Foundry. Illustrates and describes water boxes, portable jib cranes, cupola charging, safety japanning ovens, etc., at a Cleveland, O., foundry. 2500 w. Ir Age—June 27, 1912. No. 33985 C.

Construction of a Modern Manufacturing Plant. Illustrates and describes features of new works in Cleveland, O., including the layout and arrangement of departments. 3000 w. Ir Trd Rev—July 4, 1912. No. 34245.

The Taylor-Boggis New Foundry at Cleveland, Ohio. Illustrated description of foundry and equipment for high grade gray iron castings. 2500 w. Castings—July, 1912. No. 34681.

A Foundry Four Stories in Height. Illustrated description of a plant at Cleveland, O., and its equipment on each floor. 2500 w. Ir Age—Sept. 19, 1912. No. 36018 C.

A Crucible and Converter Steel Casting Plant. Illustrated account of how the two processes are combined by the Chicago Steel Foundry Co. and the advantages. 3000 w. Ir Trd Rev—Sept. 19, 1912. No. 36028.

Chicago's Jobbing Steel Foundry. Illustrated description of a new plant, a valuable example in arrangement and equipment. 800 w. Ir Age—Sept. 19, 1912. No. 36022 C.

Continuous Operations in a Radiator Foundry. Illustrated description of the labor-saving equipment in a plant at Kewanee, Ill. 2500 w. Foundry—Jan., 1912. No. 29299.

Modern Acid Open-Hearth Steel Casting Plant. Illustrates and describes features of construction and equipment of plant No. 2 built by the Union Steel Casting Co., Pittsburgh, Pa. 3000 w. Foundry—Jan., 1912. No. 29303.

New Foundry for Converter Steel Castings. Illustrated description of a plant at Lynne, Pa., for making small castings. 1000 w. Ir Age—Sept. 19, 1912. No. 36021 C.

The Niles Tool Works New Foundry. Illustrated description of an addition to the plant at Hamilton, Ohio, and the special facilities. 1800 w. Ir Age—May 9, 1912. No. 32659 C.

The New Plant of the Vanadium Metals Company at Groton, Conn. Brief illustrated description. 1200 w. Brass Wld—Nov., 1911. No. 28248.

The New Plant of the Rödinghausen Foundry in Menden, Westphalia (Die Neuanlage der Giesserei Rödinghausen in Menden i. W.). E. Vorbach. Illustrated description of plant and equipment. 3000 w. Stahl u Eisen—June 27, 1912. No. 34511 D.

Features of the New Foundry at Rödinghausen. Illustrated description of plant for producing small castings. 1500 w. Castings—Aug., 1912. No. 35260.

The Foundries of the New R. Wolf Plant, Magdeburg-Buckau (Die Giessereien neuen Werkes von R. Wolf, Magdeburg-Buckau). Illustrated description of the plant. 2500 w. Giess-Zeit—July 15, 1912. No. 35518 D.

Gas or Steam Power for Foundries (Gas- oder Dampfbetrieb auf Hüttenwerken). M. Langer. Discusses the relative advantages of either along other lines and applies results to foundry work. 3500 w. Stahl u Eisen—Dec. 21, 1911. No. 29704 D.

The Iron and Steel Foundry of the Société Francaise de Constructions Mécaniques in Denain (Die Eisen- und Stahlgiesserei der Société Francaise de Constructions Mecaniques in Denain). J. and E. Leber. Description of plant. Ills. 2100 w. Stahl u Eisen—Dec. 28, 1911. No. 29705 D.

Hanging Rooms, Drains, Molding and Casting Pits Required in Plants for Medium and Heavy Castings (Trockenkammer, Trockengruben, Form- und Giessgruben nebst dazugehorigen Betriebsmitteln für mittleren und schweren Guss). E. Skamel. Discusses the arrangements for the necessary conveniences of this sort in foundries. Serial. 1st part. 1400 w. Giesserei-Zeitung—Jan. 1, 1912. No. 30574 D.

The Iron Foundry in the Last Ten Years (Das Eisengiessereiwesen in den letzen zehn Jahren). E. Leber. Review of developments and practice throughout the period. Serial. 1st part. 4500 w. Stahl u Eisen—Jan. 25, 1911. No. 30509 D.

See also same heading, under CIVIL ENGINEERING, *Construction;* Ventilation, under *Heating and Cooling,* and Shops, under STREET AND ELECTRIC RAILWAYS.

Foundry Appliances

Pig-Breakers for Foundry Work (Fallwerke für Giessereibetriebe). E. Kametz.

Describes approved construction and operation. Ills. 2100 w. Giess Zeit—Sept. 15, 1912. No. 36611 D.

Recent Pig Iron Casting Machine (Neuere Roheisengiessmaschinen). R. Schmid. A description of the Aplerbeck machine in which the molds, carried on the rim of a large wheel, are automatically filled and dumped. Ills. 3800 w. Stahl u Eisen—Aug. 29, 1912. No. 36116 D.

A New Machine for Casting and Transporting Pig Iron (Neue Maschine zum Giessen und Verladen von Giessereiroheisen). Another description of the Aplerbeck circular machine. Ills. 1600 w. Giess Zeit—Aug. 1, 1912. No. 36129 D.

Machines for Foundry Forms (Le Macchine di Formatura nella Fonderia). Leone Puccinelli. Describes some of the special forms in use. Ills. Serial. 1st part. 2800 w Industria—July 21, 1912. No. 35597 D.

Foundry Coke

See Analysis, under Mining and Metallurgy, *Coal and Coke*.

Foundry Industry

The Metal Foundry Industry of the Year 1911 (Das Metallhüttenwesen im Jahre 1911). B. Neumann. Reviews production, consumption, and cost statistics of the year. First article devoted to copper. Serial. 1st part. 4500 w. Glückauf—Sept. 21, 1912. No. 36607 D.

Foundry Laboratories

See Laboratories, under Civil Engineering, *Construction*.

Foundry Management

See Management, under Industrial Economy.

Foundry Mixers

Recent Mixer Plants (Neuere Mischeranlagen). Description of new electric foundry mixers put out by the Deutsche Maschinenfabrik A. G. in Duisberg. Ills. 2000 w. Oest Zeit f Berg u Hüttenwesen —April 20, 1912. No. 32703 D.

Foundry Practice

Non-Ferrous Foundry Economics and Refinements. E. A. Barnes. Illustrated discusson of details essential to economical operation. Also general discussion. 6000 w. Am Brass Found Assn—May, 1911. No. 27676 N.

Economics and Improvements in Metal Foundries (Ueber Betriebsersparnisse und Verbesserungen in der Metallgiesserei). Treating on the management of the plant. Serial. 1st part. 1600 w. Giesserei-Zeitung—Jan. 1, 1912. No. 30572 D.

Foundry Melting and Mixing. David M'Lain. From a paper before the Pittsburgh Found. Assn. An account of early experience with semi-steel mixtures, showing the importance of cupola management. 4000 w. Ir Age—March 14, 1912. No. 31165 C.

Mixing and Melting Iron Scientifically. David McLain. Explains why iron should be mixed by analysis rather than by grade. 3500 w. Foundry—April, 1912. No. 31698.

Economics in Foundry Mixing and Melting. Stuart Dean. First of a series of articles dealing wth shop and foundry management and methods. 3000 w. Ir Age—Sept. 19, 1912. Serial. 1st Part. No. 36019 C.

Economic Machine Operation in Foundries (Maschinenwirtschaft in Hüttenwerken). H. Hoffmann. The first article discusses the economy obtained by the use of gas-engines. Ills. Serial. 1st part. 4000 w. Zeitschr des Ver deutscher Ing —Mar. 16, 1912. No. 32039 D.

British Brass Foundry Practice Discussed. Brief discussion of types of furnaces used. 1500 w. Foundry—Feb., 1912. No. 30138.

American Foundry Practice (Ueber amerikanische Giessereiverhältnisse). C. Humperdinck. Review of conditions found by a traveler in America inspecting American foundries. Ills. 3800 w. Stahl u Eisen—April 25, 1912. No. 32700 D.

American Foundry Practice (Amerikanische Hüttenwerke). Peter Eyermann. Reviews methods and appliances in some of the large American plants. Ills. 4800 w. Zeit d Oest Ing u Arch Ver—Aug. 16, 1912. No. 36167 D.

Improving Cast Iron by Addition of Titanium (Ueber Verbesserung des Gusseisens durch Titan). W. Venator. Theory and experiments. Serial. 1st part. 1400 w. Giesserei Zeit—Dec. 1, 1911. No. 29725 D.

An Uninterrupted Foundry Plant (Ein ununterbrechner Eisengiessereibetrieb). Describes a circular continuously operated plant. Ills. Serial. 1st part. 2100 w. Giesserei-Zeitung — Jan. 1, 1912. No. 30573 D.

Testing Raw Materials and Bi-Products in Foundries (Ueber die Probenahme von Rohstoffen und Zwischenerzeugnissen auf den Hüttenwerken). W. Schäfer and E. Corleis. Papers presented before the German Founders Association. 3500 w. Stahl u Eisen—Jan. 11, 1912. No. 30505 D.

Results From Ventilators and Blowers (Wirkung von Ventilatoren und Kapselgebläsen). Georg Lindner. Mathematical determination of the relative effects from the two kinds of draft. 3150 w. Giesserei Zeitung—Feb. 15, 1912. No. 31302 D.

Mechanical Appliances and Materials in the Foundry (Matériel et Outillage Mécanique de la Fonderie). L. Descroix. A review of British and French practice. Ills. Serial. 1st part. 3000 w. Technique Moderne—March 1, 1912. No. 31398 D.

"Burning On" in Steel. J. S. Hughes. A record of results of experiments carried out in a novel process. 1000 w. Engng—April 19, 1912. No. 32467 A.

Stopping-Off in the Foundry. Explains examples of stopping-off to avoid making new patterns, and to avoid cutting an existing pattern that may be used again. Ills. 1200 w. Mech Wld—Oct. 11, 1912. No. 36936 A.

Making Cast-Iron Pulleys. Describes method used for making arm pulleys by hand. Ills. 1000 w. Mech Wld—Jan. 19, 1912. No. 30167 A.

Fastening Cores to the Bottoms of Moulds. Walter J. May. Suggestions for securing successful castings. 1000 w. Prac Engr—April 5, 1912. No. 31985 A.

Notes on the History of Iron Casting in the 16th Century (Zur Geschichte der Eisengiesserei im 16. Jahrhundert). Paul Martell. An interesting review of methods in use at that period. 2000 w. Giess Zeit—April 15, 1912. No. 32708 D.

See also Car Wheels, under RAILWAY ENGINEERING, *Motive Power and Equipment.*

Foundry Records

Comparative Records Foundry Operations. G. E. Andres. Explains records and their value. 2500 w. Ir Trd Rev—Dec. 14, 1911. No. 28970.

Foundry Transportation

Modern Transport and Lifting Devices in Iron Foundries (Neuzeitige Transport- und Hebezeuge in Eisengiessereien). Hubert Hermanns. Review of cranes, conveyors, etc., employed in the verious services of foundries. Ills. Serial. 1st part. 4800 w. Giess Zeit—June 1, 1912. No. 33543 D.

See also Cranes, under *Transporting and Conveying.*

Fountain Pens

See Shop Practice, under *Machine Works and Foundries.*

Furnace Charging

Calculation of Furnace Charges. Regis Chauvenet. Discusses calculations based on formulae and equations, illustrating by problems. 3500 w. Met & Chem Engng—Jan., 1912. Serial. 1st part. No. 29311 C.

Details of 30-Ton Electrically-Operated Traverser with Revolving Table. Illustrates and describes details of a form of traverser designed for use in connection with the charging of annealing furnaces. 1200 w. Engng—Aug. 30, 1912. No. 35889 A.

Furnace Regulation

Balanced Draft Furnace Regulation. Warren O. Rogers. Describes a system for maintaining atmospheric pressure in a boiler furnace. Ills. 1200 w. Power—April 9, 1912. No. 31854.

Furnaces

Design of Oil-Fired Open-Hearth Furnaces. Walter Macgregor. Read before the Am. Found. Assn. Explains the designing of a furnace to suit the combustion of oil fuel. 2500 w. Ir Trd Rev—Nov. 16, 1911. No. 28069.

Design of Oil-Fired Open-Hearth Furnaces. W. MacGregor. Outlines the design of a 5-ton furnace, discussing the conditions that will determine the proper furnace proportions. 2500 w. Mech Engr—Jan. 5, 1912. No. 29670 A.

Continuous Oil or Gas-Fired Heating Furnaces. Illustrated description of the Gordon-Prall furnace. 800 w. Ir Trd Rev—April 25, 1912. No. 32365.

Industrial Furnaces. J. B. M. Knutsen. Read before the Soc. of Chem. Ind. of Victoria. Considers their requirements, and in the present number discusses gas and oil fuel furnaces. 1500 w. Anst Min Stand—May 30, 1912. Serial. 1st part. No. 34193 B.

Natural Draft Gas Furnaces. E. P. Taudevin. Abstract of a lecture at the Glasgow & W. of Scotland Tech. Inst. Deals specially with furnaces fired with gas supplied at the normal main pressure. Ills. 1800 w. Ir & Coal Trds Rev—July 12, 1912. No. 34724 A.

Oil Burning Frame Plate Furnace. R. D. Gatewood. Illustrates and describes details of a frame and plate-bending furnace using fuel oil. 700 w. Am Mach—July 18, 1912. No. 34491.

The Movement of the Gases in Foundry Furnaces (Die Bewegung der Gase in den hüttentechnischen Oefen). A. Roitzheim. A physical study of the heat paths in furnaces. Diagrams. Serial. 1st part. 3800 w. Stahl u Eisen—June 13, 1912. No. 34501 D.

Comparative Studies of Gas Heating and Direct Heating in Furnaces (Étude comparée du Chauffage au Gaz et du Chauffage Direct en Foyers). Paul Cousin. Pointing out the advantages obtained through gas heating. 5300 w. Tech Mod—Sept. 1, 1912. No. 36203 D.

Crucible Process for Making Steel Castings. Illustrates and describes the Milwaukee type of natural-draft, oil-fired furnace which is successfully used for making steel castings. 5000 w. Ir Trd Rev—Oct. 26, 1912. No. 36980.

Dimensions of Open-Hearth Furnaces Based on Practical Data. M. A. Pawloff. Trans. from *Stahl und Eisen*. Gives data on dimensions from modern European practice. 1200 w. Met & Chem Engng—Jan., 1912. No. 29313 C.

The Operation of Small Open-Hearth Furnaces. B. H. Reddy. Illustrates and describes various types of fuel-oil burners with the arrangement of the burner port. 3500 w. Foundry—March, 1912. No. 30957.

Forced-Draught Furnace Front. Brief illustrated description of a type made in Liverpool. 600 w. Engng—Jan. 12, 1912. No. 29911 A.

McLean's Compensated Draught Furnaces. Drawings showing how the draught compensation is effected. 2000 w. Engng—Feb. 9, 1912. No. 30670 A.

Firebrick Furnace Arches. A. E. Dixon. Suggestions as to proper mortar to use, how to lay the brick, etc. 1200 w. Power—Feb. 20, 1912. No. 30483.

Russian Wood-burning Furnaces. Illustrates and describes types. 1500 w. Prac Engr—Feb. 9, 1912. No. 30663 A.

The Jones Process for "Metallizing" Ore. Explains what has been accomplished by the "Slep" furnace. 1000 w. Ir Age—Dec. 14, 1911. No. 28944.

The New Thin-Lined Warwick Furnace. Illustrated description of a new blast furnace. 700 w. Ir Age—July 25, 1912. No. 34766 C.

See also Brass Founding, and Electric Furnaces, under *Machine Works and Foundries*, and Electric Furnaces, under ELECTRICAL ENGINEERING, *Electro-Chemistry*.

Galvanizing

Mechanical Electro-Galvanizing. Address before the Nat. Electro-Platers' Assn. Describes the cold process of coating metal with zinc and the different machines used. Ills. 2000 w. Ir Age—Feb. 15, 1912. No. 30417.

Galvanizing Iron and Steel (Le Zingage du Fer et de l'Acier). M. Sang. Presenting the modes of treatment in the heat process, electrolytic process, sherardizing and other processes. 15000 w. Rev de Métallurgie—Jan., 1912. No. 30602 H.

Galvanizing. Louis Potthoff. Read before the Nat. Electroplaters' Assn. Illustrated description of the electro-galvanizing process and plants. 2500 w. Brass Wld—March, 1912. No. 31446.

Galvanizing and Corrugating Plant and Machinery. F. W. Jackson. Briefly describes the operation and gives illustrated description of an automatic galvanizing plant. 1000 w. Prac Engr—July 11, 1912. Serial. 1st part. No. 34612 A.

Dry Galvanization or Sherardizing (Ueber das Trockenverzinken oder Sherardisieren). Ernst Bernheim. Details of plant operation with the Sherardizing process. Ills. 1750 w. Stahl u Eisen—May 23, 1912. No. 33506 D.

The Sherardizing Process. Thomas Liggett, Jr. Read before the Phila. Found. Assn. An account of the process, with information concerning the durability of the coating, testing, etc. 2200 w. Foundry—March, 1912. No. 30955.

The Sherardizing Process. Oliver W. Storey. Explains this process for the prevention of rust and describes methods used at Economy, Pa. 4000 w. Wis Engr—April, 1912. No. 32409 C.

Gear Cutting

Hobbing Helical Gears without a Differential Gear. Will. O. Wynne. Detailed description of the procedure. Ills. 1000 w. Prac Engr—March 29, 1912. No. 31886 A.

The Hob and the Gear. P. Ballard. Deals particularly with the rotary motion of the gear and the actual generating of the involute, giving diagrams to illustrate the cutting action of the tool. 2500 w. Engr, Lond—Aug. 30, 1912. No. 35896 A.

Gear Generating Machine. The present article illustrates and describes Wallwork's gear hobbing machine. 700 w. Prac Engr—April 12, 1912. Serial. 1st part. No. 32261 A.

Gear Cutting (Das Fräsen von Zahnrädern). C. Brückner. Describes the theory and practice of gear cutting. 2200 w. Zeit des Ver Deutscher Ing—Dec. 30, 1911. No. 29768 D.

Holding Gears for Grinding. Gives several methods of chucking hardened gears. Ills. 1500 w. Am Mach—Feb. 8, 1912. No. 30276.

See also Gears, under *Machine Elements and Design*.

German Works

A Trip Through the Industrial Plants of Germany. A. G. Christie. Describes features of interest in plants visited. Ills. 4000 w. Wis Engr—Nov., 1911. Serial. 1st part. No. 28281 C.

Grinding

Efficiency in Cylindrical Grinding. F. B. Jacobs. Considers methods employed for obtaining the maximum output from the grinding machine. 2000 w. Mach, N Y—March, 1912. No. 30919 C.

Grinding Wheel Efficiency. Revere Chapell. Discusses various conditions affecting wheels and their selection for the work. 1500 w. Am Mach—May 30, 1912. No. 33316.

Grinding. J. J. Guest. Read before the Inst. of Auto. Engrs. Considers the reasons that have caused the comparatively sudden development and the present position of the process. 800 w. Prac Engr—May 10, 1912. Serial. 1st part. No. 32975 A.

The Grinding Process. Discusses its importance in the accurate production of motor car parts. Ills. 4000 w. Autocar—June 15, 1912. No. 33916 A.

Modern Grinding Practice. H. Pearman. Discusses abrasives, their requisite properties, the bonding of grinding wheels, etc., in the present number. Ills. 4500 w. Prac Engr—July 4, 1912. Serial. 1st part. No. 34394 A.

Grinding Brass, Bronze, Aluminum and Other Non-Ferrous Alloys. From a paper by George W. Thompson, giving information of interest. 1200 w. Brass Wld—July, 1912. No. 34750.

Some Notes on Grinding Machines. Irvin Haworth. Discusses abrasives and the manufacture of grinding wheels, the grinding operations, etc., in this first number. 2000 w. Mech Wld—Sept. 13, 1912. Serial. 1st part. No. 36259 A.

Commercial Grinding. F. B. Jacobs. Illustrates and describes practical examples. 1500 w. Mach, N Y—Oct., 1912. No. 36461 C.

Grinding and Scraping Compared. Walter G. Groocock. Discusses the defects of grinding machines and the care needed in scraping operations. 3500 w. Am Mach—Oct. 17, 1912. No. 36807.

Some Notes on Abrasive Wheels. George W. Burley. Illustrated article, giving information concerning abrasive materials and their forms and uses. 2000 w. Mech Wld—April 26, 1912. Serial. 1st part. No. 32838 A.

Grinding Inserted Tooth Cutters. W. S. Tyler. Illustrates and describes a grinding device that aims to so grind the cutters that they will all cut evenly. 1500 w. Am Mach — June 13, 1912. No. 33643.

The Rivett Internal Grinding Machine in the Automobile Factory. Chester L. Lucas. Illustrates and describes its application to various kinds of work in automobile construction. 2000 w. Mach, N Y—July, 1912. No. 34169 C.

Horn Comb Finishing Machines. Illustrates and describes grinders of various kinds for this work. 1500 w. Am Mach—Feb. 1, 1912. No. 30119.

New Model Vertical Surface Grinder. Illustrated description of a grinder which will handle either plain or circular grinding. 1000 w. Am Mach—Feb. 8, 1912. No. 30277.

See also Gear Cutting, and Rolls, under *Machine Works and Foundries.*

Hardening

Quenching Carbon Steel After Correct Heating for Hardening. Shipley N. Brayshaw. A record of experiments and their interpretation. 4500 w. Engineering Magazine—Dec., 1911. No. 28392 B.

See also Casehardening, under *Machine Works and Foundries,* and Cast Iron, under *Materials of Construction.*

Industrial Works

The Creusot Works—A Type of Continental Industrial Achievement. Illustrated description of this important French plant. 3000 w. Engineering Magazine—Jan., 1912. No. 29206 B.

Jigs

Jigs of the Saurer Motor Factory. Ethan Viall. Illustrates and describes a number of jigs, showing shop practice. 900 w. Am Mach—Feb. 22, 1912. No. 30687.

Uses and Advantages of the Latch Jig. J. N. Bethel. Explains its adaptability for the rapid production of interchangeable parts. Ills. 800 w. Am Mach—March 21, 1912. No. 31277.

Jigs for Newspaper Folding Machine. F. A. Stanley. Illustrates and describes tools of simple design used in an Omaha shop. 1000 w. Am Mach—May 16, 1912. No. 32868.

Locating Jig Buttons. H. P. Fairfield. Illustrates and describes the method of setting jig buttons for accurately locating centers in the body or frame of drill jigs. 1500 w. Mach, N Y—June, 1912. No. 33348 C.

The Making of Bushings for Drill Jigs. F. B. Jacobs. Considers methods, proportions of bushings, materials used, turning, hardening, grinding and lapping operations. Ills. 4000 w. Mach, N Y—Sept., 1912. No. 35663 C.

Adaptability of Universal Drill Jigs. M. E. Ellis. Types of jigs that have proved satisfactory are illustrated and described. 1000 w. Am Mach—Oct. 31, 1912. No. 37089.

Jigs for Castings and Steel Parts. Joseph C. Wilson. Illustrates and describes types of drill jigs and milling and grinding fixtures for different operations. 3000 w. Am Mach—Oct. 10, 1912. No. 36708.

Knurling

Knurling in the Screw Machine. S. Nevin Bacon. Describes methods of knurling as applied in different factories. Ills. 700 w. Am Mach—Feb. 8, 1912. No. 30280.

Knurling Tools for Screw Machines. S. Nevin Bacon. Illustrated descriptions of special tools. 1000 w. Am Mach—Feb. 22, 1912. No. 30690.

Krupp Centennial

Friedrich Krupp and the Founding of the Krupp Steel Works (Friedrich Krupp und die Gründung der Gussstahlfabrik). Review of the formation in 1811 and 1812, and development of the Krupp steel works during the life of its founder. Ills. 2800 w. Stahl u Eisen—Aug. 8, 1912. No. 36102 D.

Alfred Krupp, Apprentice and Journeyman (Alfred Krupps Lehr- und Wanderjahre). Reviews the years of apprenticeship in steel works after the death of his father, Friedrich Krupp. Ills. 4500 w. Stahl u Eisen—Aug. 8, 1912. No. 36103 D.

The Plant Up to the Death of Alfred Krupp, 1848 to 1887 (Die Fabrik bis zum Tode Alfred Krupps, 1848 bis 1887). Reviews the regeneration of the plant under the son of the original founder and its condition at the time of his death. Ills. 6300 w. Stahl u Eisen—Aug. 8, 1912. No. 36104 D.

The Development of the Steel Casting Plant Under Friedrich Alfred Krupp, 1887 to 1902 (Die Entwicklung der Gussstahlfabrik Unter Friedrich Alfred Krupp, 1887 bis 1902). The conduct, management and growth of the industry, and the welfare work begun under the third of the family. Ills. 2800 w. Stahl u Eisen—Aug. 8, 1912. No. 36105 D.

Further Development of the Plant From 1902 to the Present (Die Weiterentwicklung der Gussstahlfabrik von 1902 bis zur Gegenwart). Reviews the later additions to the plant under the management of Bertha Krupp. Ills. 2500 w. Stahl u Eisen—Aug. 8, 1912. No. 36106 D.

The Development of the Krupp Works (Die Entwicklung der Kruppschen Werke). Aug. Hillringhaus. A brief review of the more important epochs in the hundred years since the founding. Serial. 1st part. 2800 w. Giess Zeit—Aug. 15, 1912. No. 36131 D.

The Century Existence of the Firm, Fried. Krupp, Essen (Das hundertjührige Bestehen der Firma Fried. Krupp, Essen). Brief sketch of the history of the firm during the four generations since its origin. 5000 w. Glasers Ann—Aug. 15, 1912. No. 36144 D.

Krupp, 1812 to 1912 (Krupp 1812 bis 1912). Conrad Matschoss. A biographical sketch of the four generations in charge of the plant, and the stages of growth and development under each management. Ills. 20,000 w. Zeitschr des Ver Deutscher Ing—Aug. 10, 1912. No. 36159 D.

See also Steel-Making, under MINING AND METALLURGY, *Iron and Steel.*

Lathes

The Forms of Lathe Beds. Joseph G. Horner. Illustrates and describes types, showing development. 3500 w. Mach, N Y—Jan., 1912. Serial. 1st part. No. 29284 C.

The Advantage of the Narrow Guide. H. T. Millar. Refers to an earlier article by J. G. Horner on "The Forms of Lathe Beds," and gives an analysis of the conditions of grinding surfaces, particularly the narrow guide. Ills. 1500 w. Mach, N Y—May, 1912. No. 32518 C.

Some Notes on Lathes and Kindred Appliances. Irvin Haworth. Discusses methods of dealing with a variety of work. 1500 w. Mech Wld—June 28, 1912. Serial. 1st part. No. 34324 A.

Speeds of Economical Lathe Drives. A. G. Popcke. Suggestions for choosing the most suitable speed. 2000 w. Am Mach—July 18, 1912. No. 34488.

Cutting Force, Supporting Power and Drive on Lathe Work (Schneidkraft, Supportanlage und Antriebe an Drehbänken). Georg Lindner. Calculations for the determination of these forces. Ills. Serial. 1st part. 4500 w. Zeitschr f Werkzeugmaschinen u Werkzeuge—Feb. 5, 1912. No. 31348 D.

The Value of a Small Lathe. Gives particulars of the work which can be undertaken, and details of the equipment.

Ills. 3000 w. Autocar—May 18, 1912. No. 33260 A.

The Bench Lathe and Its Uses. Edward K. Hammond. Illustrated description of these machines and operations performed on them. 4000 w. Mach, N Y—Feb., 1912. No. 30122 C.

18-Inch Testing Lathe and Dynamometer. Illustrated description of a lathe for testing tools and drills. 500 w. Engr, Lond—Nov. 10, 1911. No. 28137 A.

Two Large Shafting Lathes. Illustrates an 80-ft. lathe with single bed, giving brief description. 500 w. Engr, Lond—March 29, 1912. No. 31899 A.

Duplex Lathe for Railway Wheels, and Quadruple-Geared Lathe Headstock. Illustrates and describes two recent machine tools of English make. 500 w. Engng —April 12, 1912. No. 32279 A.

Capstan and Turret Lathes. Illustrates and describes representative types. 6000 w. Mech Wld—July 12, 1912. No. 34717 A.

A Marine Repair Shop Lathe. Illustrated detailed description of a lathe of high power and rigidity, designed for the work of marine repair shops. 800 w. Engr, Lond—Aug. 9, 1912. No. 35307 A.

Repairing an Old Lathe in New Zealand. John Peddie. Drawings and description of work. 1000 w. Mach, N Y —Aug., 1912. No. 34924 C.

Dogs and Drivers for Lathe Work. H. E. Wood. Illustrated review of the various designs of drivers for work held between centers. 1500 w. Mach, N Y—Oct., 1912. No. 36458 C.

Driving Lathe Carriers. Fred Horner. Examines the principle of transmitting the rotation of a lathe spindle to the carrier on the work. Ills. 800 w. Mech Wld—Oct. 4, 1912. Serial. 1st part. No. 36846 A.

Testing Lathes for Repairs. Describes methods useful to those who are in charge of machine tools. 1000 w. Mech Wld—Nov. 10, 1911. No. 28123 A.

Development of the Roughing Lathe. B. Buxbaum. Discusses influences that have affected the development of this high-speed machine. 4000 w. Am Mach—Jan. 11, 1912. No. 29533.

The Rotating Slotter (Die rotierende Kurbelschleife). W. L. Thele. Details in the mathematical calculations in the design of these lathes. Ills. 5000 w. Zeitschr f Werkzeug—June 25, 1912. No. 34513 D.

See also Tools, under *Machine Works and Foundries.*

Lathe Work

A Discussion of Modern Engine Lathe Methods. Henry M. Wood. Illustrates and describes interesting examples of lathe work and attachments for special operations. 6000 w. Ir Trd Rev—Jan. 4, 1912. No. 29370.

Chucking and Holding Work in the Lathe. Illustrates and describes examples of such work. 1000 w. Mech Wld—Dec. 22, 1911. No. 29464 A.

An Interesting Job on the Gridley Automatic Turret Lathe. Chester L. Lucas. Illustrated description of the making of a 3-inch shrapnel shell on the 3¼-inch single-spindle machine. 1000 w. Mach, N Y—April, 1912. No. 31666 C.

Lock Nuts

Lock Nuts. Suggestions for their successful manufacture. 1000 w. Prac Engr —May 17, 1912. No. 33267 A.

Looms

A Rotary Circular Loom. Illustrated detailed description of an ingenious machine for weaving fabrics into tube form. 1000 w. Engr, Lond—Feb. 2, 1912. No. 30411 A.

Machine Handles

Machine Handles. Fred Horner. Illustrated study of the various types of handles and handwheels used on machine tools. 3000 w. Mach, N Y—June, 1912. Serial. 1st part. No. 33350 C.

Machine Operations

The Determination of the Most Favorable Mode of Operating Machines with Rectifiers (Essais pour la détermination du mode de travail le plus favorable de la machine à rectifier). W. Pockrandt. Results of experiments. Ills. 7500 w. Rev de Métallurgie—Dec., 1911. No. 29803 N.

Machine Tools

Betterment of Machine-Tool Operation by Scientific Metal Cutting. Carl G. Barth. Gives records of shop experience in characteristic cases. 4200 w. Engineering Magazine—Jan., 1912. No. 29211 B.

Standardization of Machine Tools for the Benefit of the User. Abstract of paper by L. P. Alford, read before the Nat. Machine Tool Bldrs. Assn. Discusses six important principles which should be observed in the standardization. 2500 w. Mach, N Y—Nov., 1911. No. 27599 C.

Standardization of Machine Tools. E. H. Fish. Considerations from both the maker's and users' viewpoints. 2000 w. Am Mach—May 2, 1912. No. 32529.

Standardization of Machine Tools. W. L. Schellenbach. Gives the writer's views as to what should be standardized and the things that should not be standardized. 4000 w. Am Mach—Jan. 18, 1912. No. 29647.

Machine Tool Design. Combats statements made in Prof. Nicolson's articles. 2200 w. Prac Engr—April 26, 1912. No. 32834 A.

A Problem in Machine Tool Design and Its Solution. George W. Burley. States the problem and gives its mathematical solution. 600 w. Prac Engr—July 18, 1912. No. 34732 A.

Some Stresses in Machine Tool Members. H. H. Broughton. Illustrates by examples, problems in machine tool work and their solution. 1500 w. Prac Engr—July 18, 1912. No. 34731 A.

Machine Tool Design and Reverse Stresses. W. G. Dunkley. Considers the effect of reversal of stress upon the tool. 1000 w. Prac Engr—Aug. 22, 1912. No. 35499 A.

Standard Speeds and Feeds for Machine Tools. Describes a method aiming to control and standardize the speed, depths of cut, and rate of traverse during machining operations, calling attention particularly to the form of card chart. 1800 w. Engr, Lond—Oct. 4, 1912. No. 36852 A.

Speeds and Feeds of Machine Tools. Carl G. Barth. Continued discussion of address on Standardization of Machine Tools, given before the Nat. Mach. Tool Bldrs. Assn. 2500 w. Am Mach—Jan. 11, 1912. No. 29530.

Positions of Screws in Machine Tools. Considers the best positions in lathes, screw-planing machine, etc. Ills. 1200 w. Prac Engr—May 3, 1912. Serial. 1st part. No. 32875 A.

Cone and Gear Ratios for Machine Tools. H. A. Pearn. Gives tables and formula helpful to designers. 2500 w. Prac Engr—April 19, 1912. No. 32491 A.

Labor-Saving Devices That Produce Automobiles. Theodore M. R. von Keler. Illustrates and describes multiple production machines and their influence on automobile prices. 1500 w. Sci Am—Oct. 12, 1912. No. 36775.

What Constitutes a Machine Tool? A synopsis of decisions by the U. S. General Appraisers and the U. S. Court of Customs Appeals. 2500 w. Ir Age—Feb. 29, 1912. No. 30856 C.

High-Speed Steel Tools on Low and Medium Power Machines (Les Outils en Acier rapide sur les Machines de faible et de moyenne puissance). P. Gorgen. Presents arguments on the economic results to be obtained by their use. Ills. 3600 w. Technique Moderne—Feb. 1, 1912. No. 30610 D.

Hard vs. Soft Cast Iron for Machine Tools. Robert Grimshaw. Gives opinions of well-known English and French builders. 1600 w. Mach, N Y—Jan., 1912. No. 29283 C.

Some Recent Developments in British Machine-Tool Design. Joseph Horner. Illustrates and describes examples of late British practice. 8000 w. Cassier's Mag —Jan., 1912. No. 29881 B.

The Position of German Machine Tools in the World's Markets (Die Stellung der deutschen Werkzeugmaschine auf dem Weltmarkte). G. Schlesinger. Compares relative imports and exports by diagrams, and illustrates types of machinery. Serial. 1st part. 4000 w. Zeit des Ver Deutscher Ing—Dec. 9, 1911. No. 29761 D.

Two New Machine Tools. Illustrates and describes a double-valve facing machine, and a boring and drilling machine, built in England. 1200 w. Engr, Lond —May 17, 1912. No. 33279 A.

Internal Cutting-Off Machine. Illustrates and describes special features of a new Newton machine. 1200 w. Ir Age —June 6, 1912. No. 33442 C.

Modern Machine Tools for Metal Work (Les machines-outils modernes pour le travail des métaux). E. Gay. This first of the series deals with the description of modern milling cutters. Ills. Serial. 1st part. 3500 w. Tech Mod—June 1, 1912. No. 34003 D.

The Machine Tool Export Trade. W. A. Viall. Address to the Nat. Machine Tool Bldrs. Assn. A résumé of what has been done in the American machine tool export trade. 2500 w. Am Mach—Oct. 31, 1912. No. 37091.

British Machine Tools at the Olympia Exhibition. Illustrated review of exhibits with comments. 22500 w. Engr, Lond—Oct. 18, 1912. (Sup.) No. 37075 A.

A New Automatic Box Board Machine. Illustrated description of a machine designed to take in rough material and to make up finished box sides and ends to required dimensions. 800 w. Engr, Lond —Sept. 20, 1912. No. 36502 A.

Machine Tools at the 1911 Turin Exhibition (Die Werkzeugmaschinen auf der Internationalen Ausstellung in Turin 1911). Franz Adler. Describes some of the metal and wood cutting machines at this exhibition. Ills. 2600 w. Zeitschr d Ver Deutscher Ing—Nov. 25, 1911. No. 28817 D.

Making a Comptograph Type-Bar. Glenn Muffly. Illustrated description of a small multiple-spindle drilling machine designed to roll the figures into the curved face of the type-bar. 2500 w. Am Mach—May 9, 1912. No. 32664.

Manufacturing Cotton Gin Parts. Ethan Viall. Illustrates and describes special machines and their uses. 2500 w. Am Mach—May 16, 1912. No. 32865.

Three Old-Time Machine Tools. Illustrates and describes an old lathe and shaper with some unusual features, and an old drilling machine. 700 w. Am Mach—July 11, 1912. No. 34347.

Lining Up Machine Tools. Francis W. Shaw. Remarks on correct and incorrect methods, with suggestions. Line drawings. 1200 w. Prac Engr—Aug. 22, 1912. No. 35498 A.

Air Valve, Piston and Bushing Work. Ethan Viall. Illustrated description of multiple-spindle profiling machines and their work. 2000 w. Am Mach—April 25, 1912. No. 32292.

Double Column Horizontal Boring, Drilling, Facing, Tapping, and Studding Machine. Illustration, with brief description. 500 w. Engng—March 29, 1912. No. 31891 A.

See also Ball Bearings, under *Machine Elements and Design;* and Depreciation, under INDUSTRIAL ECONOMY.

Machinery Cleaning

A Chapter in Industrial Sanitation. J. B. C. Kershaw. Discusses the application of vacuum cleaning to machinery in textile mills. Ills. 2500 w. Sci Am Sup—Oct. 5, 1912. No. 36522.

Metal Coloring

Anodal Metal Coloring in Ammonia Baths (Untersuchungen über anodische metallfärbung in ammoniakalischen Bädern). V. Paissakowitsch. Description of the process. Serial. 1st part. 1500 w. Elektrochem Zeit—Jan., 1912. No. 30531 D.

Metal Working

The Metal Working Industries of Dusseldorf. C. A. Tupper. Information concerning their extent and variety, the shop conditions, etc. 2500 w. Mach, N Y—Nov., 1911. No. 27596 C.

Milling

Milling Main Rods at the Juniata Shops. Franklin D. Jones. Illustrates and describes the successive stages. 1200 w. Mach (Ry Ed)—June, 1912. No. 33634 C.

Some Examples of Reciprocal Milling. A. J. Baker. Illustrated description of operations on a vise, milling slots in round pieces, surfacing, and gang sawing. 1500 w. Am Mach—Sept. 26, 1912. No. 36218.

Modern Machine Shop Milling Processes. Charles S. Gingrich. Illustrates and describes milling processes as applied to the column and knee type of machine, illustrating three systems of continuous milling. 4400 w. Jour Cleveland Engng Soc—March, 1912. No. 31571 D.

Milling Cutters

Fluted Milling Cutters. George W. Burley. Drawings and discussion of types. 2500 w. Mech Wld—July 26, 1912. No. 35158 A.

Notching Slab Milling Cutters. H. King. Describes methods of cutting notches by means of the universal miller, the universal tool grinder and the backing-off lathe. 2000 w. Am Mach—Aug. 29, 1912. No. 35492.

Re-Cutting Milling Cutters Without Annealing. F. B. Jacobs. Illustrated explanation of methods of re-cutting their milling saws, and of the end teeth of large end mills. 1500 w. Mach, N Y—May, 1912. No. 32515 C.

Cylindrical Milling-Cutters. A critical review of a paper by Mr. DeLeeuw, published in the *Jour. of A. S. M. E.* Ills. 1400 w. Engng—Dec. 15, 1911. No. 29188 A.

Forming Axial Cutter Teeth With Single-Angle Fluting Cutter. George W. Burley. Drawings and description of methods available. 3000 w. Mech Wld—Sept. 27, 1912. No. 36724 A.

Setting Double-Angle Fluting Cutters. George W. Burley. Explains a method worked out by the writer and its advantages. 2000 w. Mech Wld—Oct. 18, 1912. No. 37072 A.

See also Shop Practice, under *Machine Works and Foundries.*

Milling Machines

Universal Milling Machine Table Design. George W .Burley. Critical discussion of defects in some tables which interfere with facility of operation. 2000 w. Prac Engr—Aug. 15, 1912. No. 35386 A.

Circular Milling Attachment Work. A. J. Baker. Illustrates and describes examples of the use of the circular milling attachment with both the vertical and horizontal types of machines. 1000 w. Am Mach—Aug. 15, 1912. No. 35181.

Long-Stroke Milling Machines at the Saxony Machine Shops of Richard Hartmann in Chemnitz (Langfräsmaschine der Sächsischen Maschinenfabrik vorm.

Richard Hartmann A.-G. in Chemnitz). F. Nickel. Gives details of the construction and operation of these machines. Ills. and plate. 2800 w. Zeitschr des Ver deutscher Ing—July 13, 1912. No. 35538 D.

A New System for Locating Holes to be Bored on the Milling Machine. George J. Murdock. Describes a system where a center-punch mark takes the place of the button from which to indicate the work. Ills. 2500 w. Mach, N Y—April, 1912. No. 31665 C.

Milling Machines and Their Work. Joseph G. Horner. Reviews their development, the requirements of present practice and some recent designs. 2500 w. Prac Engr—March 29, 1912. Serial. 1st part. No. 31885 A.

History of the First Milling Machine. Joseph W. Roe. A brief history of the Whitney miller. Ills. 900 w. Am Mach —June 27, 1912. No. 33958.

Mixing Machine

Revolving-Pan Mixing-Machine. Illustrated description of a machine intended for bread-making, but capable of industrial applications. 700 w. Engng—Oct. 27, 1911. No. 27733 A.

Molding

American and European Molding Machine Practice. E. V. Ronceray. Discusses features of various mechanical aids to molding operations. Ills. 2500 w. Castings—May, 1912. No. 32967.

Molding Cylinders on an Electric Jar-Rammer. Illustrates and describes how a large number of gasoline engine cylinders were successfully made. 1000 w. Foundry—May, 1912. No. 32560.

Molding a Water-Cooled Gas Engine Cylinder. J. D. Robinson. Read before the British Found. Assn. Illustrates and describes methods pursued in an English foundry. 1500 w. Foundry—Oct., 1912. No. 36439.

The Building of a Column Mold Pattern. James F. Hobart. Illustrated detailed description of the making of the mold and the outcome of the work. 2500 w. Castings—Aug., 1912. No. 35263.

Molding Friction Drum Castings on Machines. Illustrates and describes details of shop practice, and a gray iron foundry in Newark, N. J. 2500 w. Foundry—Aug., 1912. No. 34958.

Molding Large Castings in an English Foundry. Illustrates and describes methods of molding sections for turbines and engines for marine service. 1200 w. Foundry—May, 1912. No. 32559.

Molding Ornamental Bronze Castings. C. Vickers. Illustrates and describes accurate reproduction by the lost wax process as practiced in modern foundry works. 3500 w. Foundry—May, 1912. No. 32561.

Innovations in the Bonvillain Molding Machines (Neuerungen an Bonvillainschen Formmaschinen). U. Lohse. Review of recent improvements in the machines put out by this company. Ills. 2400 w. Stahl u Eisen—April 25, 1912. No. 32701 D.

Advantages and Defects of the Bonvillain Molding Systems and the Development of Recent Molding Machines Based on This System (Vorzüge und Mängel des Bonvillainschen Formsystems und die Entwicklung neuerer Formmaschinen, aufgebaut auf diesem System). Arthur Lentz. Discussion on the improvements in later machines. Ills. Serial. 1st part. 2400 w. Giess Zeit—Aug. 15, 1912. No. 36130 D.

Improvements in Hinged Match-Plate Work. Illustrates and describes the practice of a Canadian stove plate foundry employing labor-saving molding devices. 2500 w. Foundry—March, 1912. No. 30953.

Arrangement of the Cupola for Continuous Pouring. Illustrated description of a novel installation in Davenport, Iowa. 1000 w. Castings—April, 1912. No. 32200.

Special Rigging and Equipment for the Foundry. Illustrated account of how molding economies are effected by the adoption of simple but practical devices for increasing the production. 1700 w. Foundry—June, 1912. No. 33407.

An Interesting New Device for Molding (Ein neues, interessantes Hilfsmittel in der Formerei). Description and uses of a new steel spiral for binding molds. Ills. 1400 w. Giess Zeit—May 15, 1912. No. 33509 D.

Pattern Plates for Molding Machine Work. Explains how they are made and gives illustrations of the various operations. 1200 w. Foundry—July, 1912. No. 34188.

Molding a 26-Ton Gray Iron Turbine Casting. Explains how economies were effected by the use of a skeleton pattern and gives details of molding and casting. 1500 w. Foundry—July, 1912. No. 34189.

How Molds Are Made for Heavy Steel Castings. Illustrates and describes the practice of the Hubbard Steel Foundry Co., East Chicago, Ind. 1500 w. Ir Trd Rev—Oct. 10, 1912. No. 36742.

Molding Machines

Hydraulic Molding Machines. E. V. Ronceray. A comparison of the hydraulically operated French molding machines with types operated in the United States. 1500 w. Am Mach—Oct. 17, 1912. No. 36809.

Economical Operation of Molding Machines. W. S. Otto. First of a series of articles on machine practice, discussing types of machines, the mounting of patterns, and all details of the work. 3000 w. Foundry—Oct., 1912. Serial. 1st part. No. 36437.

Present State of Molding Machine Operation in North America (Gegenwärtiger Stand des Formmaschinenwesens in Nordamerika). U. Lohse. Discusses American practice and machines used. Ills. Serial. 1st part. 4500 w. Zeitschr des Ver deutscher Ing—Jan. 20, 1912. No. 30568 D.

Molding Sand

The Testing of Molding Sands. Alfred B. Searle. Read before the British Found. Assn. Explains the characteristics of molding sands, the difficulties experienced in testing the value of the tests, etc. 4000 w. Mech Engr—Aug. 9, 1912. No. 35293 A.

Mechanical Preparation of Molding Sand in Foundries (Maschinelle Aufbereitung des Formsandes in Giessereien). Eduard Müller. Describes apparatus and process. Ills. 6000 w. Zeitschr des Ver deutscher Ing—July 20, 1912. No. 35540 D.

Molding Sand Tests. Discussion of the transverse strength, crushing strength, permeability to air, and clay bond. Ills. Am Found Assn—Sept. 26, 1912. No. 37142 N.

Studies of the Halberstadt Molding Sand (Studie über Halberstädter Formsand). J. Holicky. The geology of the region, mode of excavating, preparation and tests. Ills. Serial. 1st part. 2400 w. Giess Zeit—Sept. 1, 1912. No. 36608 D.

See also Sand Tests, under *Measurement.*

Molds

Green-Sand Molds Without Patterns. From *Eisen Zeitung*. Describes method. 1000 w. Mech Wld—April 19, 1912. No. 32485 A.

Some Recent Developments in Permanent Molds. Illustrates and describes details of an intricate iron mold for casting small projectiles, and a machine for making grate bars. 2000 w. Ir Trd Rev —May 2, 1912. No. 32545.

Permanent Molds in the Iron Foundry (Dauerformen in den Eisengiesserei). Hans Rolle. Reviews recent practice in the use of these molds in Europe and America, with most successful applications. Ills. Serial. 1st part. 4600 w. Stahl u Eisen—July 25, 1912. No. 35503 D.

Multiple Tools

Rapid Turning with Multiple Tools. Drawings and descriptions of work accomplished. 900 w. Am Mach—Aug. 22, 1912. No. 35311.

Pipe Painting

A Unit System of Colors for the Recognition of Piping in Industrial Plants (Einheitsfarben zur Kennzeichnung von Rohrleitungen in industriellen Betriebe). Additional remarks to a paper by G. Fontius in 1910. Plate. 1800 w. Stahl u Eisen—Nov. 30, 1911. No. 28870 D.

A Unit System of Colors for the Recognition of Piping in Industrial Plants (Einheitsfarben zur kennzeichnung von Rohrleitungen in industriellen Betrieben). Other ideas on this subject, with proposed system. 2000 w. Zeit des Ver Deutscher Ing—Dec. 2, 1911. No. 29759 D.

Pipe Founding

Casting Pipes Without Cores. Illustrates and describes the process developed by Hermann Molinder. 1700 w. Engr, Lond—May 10, 1912. No. 32996 A.

Pipe Lining

Improved Method of Lead Lining Pipe. J. E. Otterson. Illustrated description of the method in use in the Boston Navy Yard. 2000 w. Am Mach—Oct. 3, 1912. No. 36451.

Planers

Comparative Tests of Planer Drives. Samuel S. Roberts. Reports an investigation of the belt-driven and reversing-motor driven types. 1200 w. Am Mach—Feb. 1, 1912. No. 30116.

Planing Machines. An illustrated discussion of rack-driven and screw-driven machines, methods of driving and reversing, etc. 2500 w. Prac Engr—Feb. 23, 1912. Serial. 1st part. No. 31022 A.

Milling Operations on the Planer. Glenn Muffly. Illustrates and describes applications of a milling attachment to special work on the planer. 700 w. Am Mach—April 4, 1912. No. 31752.

Repairing Planers and Shapers. Edward K. Hammond. Illustrates and describes the practice of a Chicago company making a specialty of such work. 3000 w. Mach, N Y—April, 1912. No. 31667 C.

Methods Used in Erecting Planers. Edward K. Hammond. Illustrated explanation of the best methods of setting up a planer, considering the foundations, alignment, squaring up, erecting countershafts, etc. 4000 w. Mach, N Y—Sept., 1912. No. 35662 C.

Rigidity Tests of Planer Beds. J. G. Dornbirer. The Conclusion is reached that too great rigidity is undesirable. Ills. 1200 w. Am Mach—Sept. 5, 1912. No. 35779.

Gang Planing. Francis W. Shaw. Illustrates the system by an example, discussing the pros and cons. 2000 w. Prac Engr—Sept. 5, 1912. No. 35993 A.

See also Tools, under *Machine Works and Foundries*.

Planing Machines

Electrically-Driven Open-Side Planing Machine. Illustrated description of a British-built machine in which a novel form of driving has been adopted. 400 w. Engng—June 7, 1912. No. 33788 A.

Double-Cutting and High-Speed Planing Machines. J. Hartley Wicksteed. Explains conditions where this is the most economical method, and the conditions under which single-stroke cutting should be preferred. Ills. 4500 w. Inst of Mech Engrs —Nov. 17, 1911. No. 28658 N.

Short-Stroke Work on Planing-Machines. Illustrated description of the application of a magnetic clutch to prevent overrun. 700 w. Engng—Dec. 1, 1911. No. 28781 A.

A Modern Motor-Driven Planing Mill. Describes a planing mill at St. Marion, Idaho, equipped with individual motor drive. Ills. 1000 w. Elec Rev & W Elect'n—May 11, 1912. No. 32824.

Pneumatic Tools

Applications for Pneumatic Tools. Illustrates and describes a few of the uses to which they have been applied. 1500 w. Mach, N Y—March, 1912. No. 30927 C.

Presses

Making a Clip in the Punch Press. E. A. Suverkrop. Illustrates and describes the various operations in making a clip from a single piece of brass. 800 w. Am Mach—March 28, 1912. No. 31539.

The Working Parts of Geared Presses (Die Arbeitsmaschinen eines Geschirrstanzwerkes). C. Krügener. Describes various types of shears, punches, etc. Ills. Serial. 1st part. 2700 w. Zeit f Werkzeug—Aug. 5, 1912. No. 36146 D.

Manufacturing Zinc Address Plates. Ethan Viall. Illustrated description of a specially built punch press for making zinc address plates for mailing machines. 2500 w. Am Mach—July 18, 1912. No. 34487.

See also Press Design, under *Hydraulic Machinery*.

Press Tools

Press Tool Work. J. H. Horner. Illustrates and describes some of the principles governing the design and operation of sheet-metal stamping dies, giving suggestions on their construction, etc. 1200 w. Mech Wld—Jan. 5, 1912. Serial. 1st part. No. 29672 A.

Press Tools for a Steel Sheave. M. Martin. Illustrates and describes a complete set of tools to manufacture an all-steel trolley wheel. 1500 w. Am Mach—Jan. 11, 1912. No. 29531.

Problems

Shop Problems Involving Gear and Pulley Speeds. J. H. Carver. Discusses problems likely to occur in ordinary shop practice, giving solutions. Ills. 1200 w. Mach, N Y—March, 1912. No. 30924 C.

Radiator Making

Spiral and Flat Tube Radiator Work. Illustrated detailed description of an automatic machine for this work. 2000 w. Am Mech—July 25, 1912. No. 34741.

Reamers

Vickers' Adjustable Reamer. Illustrated description. 800 w. Prac Engr—May 17, 1912. No. 33266 A.

Vickers' Adjustable Reamer. Illustrated description. 900 w. Engng—Feb. 16, 1912. No. 30797 A.

Reducing Wheels

Limitations of Reducing Wheels. Julian C. Smallwood. Reports a series of tests made with a special tester upon the drum motion produced by various reducing wheels. 4000 w. Power—Sept. 24, 1912. No. 36240.

Repairs

Handling Repairs Systematically. C. A. Tupper. Suggestions for a system applicable to such work. 2200 w. Am Mach—May 2, 1912. No. 32527.

Repair Work at Panama Canal Shops. Fred H. Colvin. Illustrates and describes methods of handling large jibs and precision work on the ground and methods of repair work. 2000 w. Am Mach—Jan. 11, 1912. No. 29527.

Rolling Machines

Improved Tea-Leaf Rolling Machinery. Illustrated description of improvements which aim to give a more positive and rapid circulation of the tea leaf. 1200 w. Prac Engr—Nov. 10, 1911. No. 28118 A.

Rolling Mills

Guides in Rolling Mills (Ueber Führungen an Feineisenwalzwerken). Fr. Münker. Description of guides available for use in fine work. Ills. 2100 w. Stahl u Eisen—Oct. 5, 1911. No. 28402 D.

See also same heading under ELECTRICAL ENGINEERING, *Power Application.*

Rolls

Unpitched Broad-Flanged Channels (Neigungslose Breitflanschträger). P. Hundsdörfer. Description of rolls for rolling channels and other sections without end inclination. Ills. 2500 w. Glaser's Annalen—Feb. 1, 1912. No. 30548 D.

Grinding and Corrugating Rolls. F. A. Stanley. Methods of handling chilled iron rolls in an Omaha shop are described. Ills. 800 w. Am Mach—April 11, 1912. No. 31861.

Turning Chilled Iron Rolls. F. B. Jacobs. Illustrates and describes the process and tools used. 1400 w. Mach, N Y —June, 1912. No. 33349 C.

Grinding and Corrugating Flour Mill Rolls. F. B. Jacobs. Illustrates and describes the work and machines used. 800 w. Mach, N Y—July, 1912. No. 34158 C.

Safety Devices

Prevention of Industrial Accidents. Frederick Remsen Hutton. Illustrates and describes a number of safety devices. 2500 w. Mach, N Y—April, 1912. No. 31669 C.

Industrial Accidents and Their Prevention. Gives statistics showing the importance of accident prevention, and illustrates and describes appliances and methods that have given satisfactory results. 2500 w. Sci Am Sup—April 6, 1912. No. 31771.

Safety Appliances and Injury to Employes. W. O. Thompson. Discusses the question of safety appliances for the mechanical and car departments of railroads. Ills. Discussion. 10000 w. Pro Cent Ry Club—March 8, 1912. No. 32148 C.

Safety Standards for Machine Tools. David S. Beyer. Calls attention to standards that would be mutually beneficial to builders and users of machine tools. Ills. 5000 w. Am Mach—May 9, 1912. No. 32662.

Safety Devices as Applied to Machine Tools. Clarence Bolton. Illustrates and describes a number of simple guards which can be applied without great expense. 1500 w. Mach, N Y—Nov., 1911. No. 27592 C.

Safeguarding Factory Tools and Equipment. D. C. Pultney. Remarks on the application of safeguards, illustrating and describing some of the devices. 1500 w. Elec Jour—July, 1912. No. 34838.

Wire Mesh Guards for Machinery. Gives valuable suggestions for the application of safeguarding devices. Ills. 1300 w. Ir Age — July 25, 1912. No. 34765 C.

Safeguards for Power Plant Equipment. Edward K. Hammond. Illustrates and describes devices for preventing accidents. 1500 w. Power—June 18, 1912. No. 33758.

Safeguarding Grinding Wheels. F. B. Jacobs. Explains precautions taken to market only safe wheels, discussing causes of accidents and good and bad guards. Ills. 3000 w. Ir Age—Aug. 1, 1912. No. 34988 C.

Safeguarding the Employes of a Steel Plant. An account of the rules and regulations and safety devices adopted by the Youngstown Sheet & Tube Co. Ills. 7000 w. Ir Trd Rev—Oct. 17, 1912. No. 36871.

Accident Prevention in the American Steel & Wire Company. George H. Bigelow. Explains the need for accident prevention, how safety work was developed in this company, and the results. 5000 w. Jour Worcester Poly Inst—Jan., 1912. No. 30032 C.

Safety as Applied to Engineering. C. Eugene Pettibone. Discusses developments in safety work. Ills. Discussion. 8500 w. Jour Cleveland Engng Soc—June, 1912. No. 34057 D.

Oliver Iron Mining Co.'s Shops at Hibbing, Minn. Illustrates and describes methods of safeguarding equipment to prevent accidents. 3000 w. Ir Tr Rev —July 11, 1912. No. 34387.

Safeguards in the Eastman Kodak Works. Illustrates and describes the methods and appliances adopted. 1000 w. Ir Age—Oct. 24, 1912. No. 36982 C.

Wisconsin's Orders on Safety. Gives general orders, and those applying to woodworking machines and freight elevators. 3000 w. Am Mach—June 20, 1912. No. 33805.

How Cambria Steel Co. Safeguards Its Employes. Illustrates and describes special equipment against accidents. 2500 w. Ir Trd Rev—June 13, 1912. No. 33693.

Safeguards for Electric Cranes. Edward K. Hammond. Illustrates and describes details of safety provisions and operation in the plant of the Illinois Steel Co. 2000 w. Ir Age—May 30, 1912. No. 33330 C.

Shop Safety Appliances and Safety Education. George Bradshaw. Illustrates and describes devices and methods for securing safety, and discusses related matters. 3000 w. Ry Age Gaz—Dec. 1, 1911. No. 28568.

See also Accident Prevention, under *Machine Works and Foundries;* Cranes, under *Transporting and Conveying*, and Safety Devices, under MINING AND METALLURGY, *Coal and Coke;* and Protective Apparatus, under ELECTRICAL ENGINEERING, *Transmission.*

Sand Blasting

A New Sand Blast Rolling Barrel. Illustrated description of a new type of apparatus claiming the advantage of simplicity, durability, economy and rapid operation. 800 w. Engr, Lond—Aug. 16, 1912. No. 35480 A.

Tests of a Sand-Blasting Machine. William T. Magruder. Gives records and results of quantitative tests of a sand-blasting machine under the actual conditions of commercial practice. 2500 w. Jour Am Soc of Mech Engrs—Dec., 1911. No. 28738 C.

Sawing-Machines

Reciprocating Straight-Blade Sawing-Machines. Charles Wicksteed. Traces the development of this tool and discusses its work. Ills. 4500 w. Inst of Mech Engrs—July, 1912. No. 35206 N.

An 84-In. Sawing Machine. Illustrated description of details of the largest machine of its kind ever built. 1200 w. Ir Age—Aug. 29, 1912. No. 35606 C.

Screw Cutting

Cutting Testing Machine Screws. A. H. Emery, Jr. Illustrated description of methods used in cutting and testing. 1500 w. Am Mach—Aug. 29, 1912. No. 35491.

Cutting Multiple Thread Screws in the Lathe. W. H. Davies. Illustrated detailed description of methods used. 1500 w. Mech Wld—Jan. 19, 1912. No. 30166 A.

Taps and Screws. F. O. Wells and H. E. Harris. Also discussion. Presents some of the problems of tap and die making. Ills. 7800 w. Jour Am Soc of Mech Engrs—July, 1912. No. 34761 D.

Everyday Screw Thread Troubles. F. G. Coburn. Suggestions for remedying defects. 2200 w. Am Mach—June 6, 1912. No. 33434.

See also Knurling, under *Machine Works and Foundries*, and Screw Cutting, under *Machine Elements and Design.*

Shears

New Crank Shears (Neue Kurbelscheren). C. Krügener. A new cutting machine acting with a toggle motion. Ills. 2100 w. Zeit f Werkzeug—May 25, 1912. No. 33529 D.

Sheet-Metal Work

A Few Sheet-Metal Forming Methods. Joseph M. Stabel. Gives rules for getting the radius of right angle bends and the length of blanks and diagrams of dies. 1200 w. Am Mech—July 11, 1912. No. 34848.

Shop Appliances

Special Tools in Bath Grinder Shops. E. A. Suverkrop. Illustrates and describes some of the boring and drilling jigs and milling fixtures used. 1200 w. Am Mach—Oct. 24, 1912. No. 36950.

Test Cylinders in the Toolroom. Walter G. Groocock. Diagrams and description of methods used in testing the accuracy of angular bearing seats and the location of guide bushings in jigs and fixtures of various types. 5000 w. Am Mach—Oct. 3, 1912. No. 36450.

Electricity in Boiler Shops. Illustrated description of applications to work in boiler shops, with data sheets. 3000 w. Elec Rev & W Elect'n—Aug. 24, 1912. No. 35418.

See also Jigs, under *Machine Works and Foundries.*

Shop Costs

See Costs, under INDUSTRIAL ECONOMY.

Shop Design

Preliminary Problems in the Design of Manufacturing Buildings. E. H. Darling. Abstract of a paper read before the Engng. Soc. of the Univ. of Toronto. Discusses the subject under the heads of problems of utility, location, and finance. 4000 w. Can Engr—Nov. 9, 1911. No. 27969.

Factory Construction and Arrangement. Discussion of a paper by L. P. Alford and H. C. Farrell. 6500 w. Jour Am Soc of Mech Engrs—March, 1912. No. 31569 D.

Shop Equipment

The Care of Machinery. G. D. Ottaway. Suggestions for the up-keep of shop equipment. 1000 w. Elec Jour — July, 1912. No. 34844.

Shop Lighting

The Artificial Lighting of Machines. C. E. Clewell. Discusses important features of machine tool illumination and related topics. Ills. 3500 w. Am Mach—Jan. 25, 1912. No. 30111.

Shop Lighting Maintenance Records. C. E. Clewell. Notes suggesting methods for the accounting of costs. Ills. 2000 w. Am Mach—May 16, 1912, No. 32866.

Daylight, Distinctive in Shop Lighting. C. E. Clewell. Ninth of a series of articles on shop lighting. Discusses requirements in providing adequate daylight and light control. Ills. 3500 w. Am Mach—June 6, 1912. No. 33433.

The Equipment and Engineering Essential to Proper Industrial Lighting. Thomas W. Rolph. A discussion on design and use of reflectors. Ills. 3000 w. So Elect'n—Oct., 1912. No. 36800.

See also same heading, under ELECTRICAL ENGINEERING, *Lighting*.

Shop Practice

Notable Efficiencies in Railway Machine-Shop Operation. George J. Burns. Second article of a series discussing problems of railway machine-shop efficiency. 4500 w. Engineering Magazine—Dec., 1911. No. 28891 B.

Notable Efficiencies in Railway Machine-Shop Operation. George J. Burns. Discusses locomotive driving-box and shoe and wedge practice. 2500 w. Engineering Magazine—Jan., 1912. No. 29212 B.

Length Limits.: Francis W. Shaw. Detailed discussion of principles governing length limits in fitting a number of parts. Ills. 2500 w. Prac Engr—July 25, 1912. No. 35155 A.

Allowances on Parts to be Assembled by Pressure. S. M. Howell. Gives data secured by observation and personal experience. 1000 w. Mach, N Y—Oct., 1912. No. 36457 C.

Methods in a British Worm Gear Plant. I. W. Chubb. Illustrates and describes machines and methods used. 1500 w. Am Mach—Oct. 31, 1912. No. 37088.

Making Engineering Instruments. Fred H. Colvin. Illustrates and describes methods used at a shop in Denver, Colo. 1500 w. Am Mach—April 4, 1912. No. 31757.

Manufacturing on Precision Machines. Illustrated description of unusual milling operations. 700 w. Am Mach—April 18, 1912. No. 32116.

Grinding in, Lapping, Etc. Diagram and descriptions of methods used. 1200 w. Mech Wld—March 29, 1912. No. 31887 A.

Making an Expansion Boring Tool. Illustrated description of shop operations in a St. Louis plant. 1800 w. Ir Age—April 11, 1912. No. 31929 C.

Cutting-Out Keyways by Hand. W. R. Menzies. Describes methods used by an experienced hand, illustrating by example. 2200 w. Mech Wld—May 10, 1912. No. 32983 A.

The Stripping of Bushes. James Stormouth. Discusses difficulties and the remedies. 2000 w. Mech Wld—April 19, 1912. No. 32484 A.

Methods of a California Machine Shop. Explains a general system of numbering of all drawings, patterns and machine parts in classes. 2500 w. Am Mach—May 16, 1912. No. 32870.

Accurate Operations on the Planer. Illustrates and describes methods of producing straight square lengths of steel, with surfaces so accurate no fitting is required. 2000 w. Am Mach—Nov 2, 1911. No. 27648.

Milling Radial Teeth in Cutter Blanks. George W. Burley. Information concerning methods used. Supplement. Ills. 400 w. Mach, N Y—Nov., 1911. Serial. 1st part. No. 27595 C.

Scale Beam Tools and Machines. Ethan Viall. Illustrates and describes tools and machines used in a Canadian shop. 2000 w. Am Mach—Dec. 28, 1911. No. 29167.

Re-Cutting Milling Cutters Without Annealing. Illustrated description of method used. 800 w. Mach, N Y—Dec., 1911. No. 28540 C.

Tools Used in Building Engine Lathes. F. A. Stanley. Illustrates and describes operations in a Cincinnati shop. 1500 w. Am Mach—Dec. 21, 1911. No. 29132.

Making Valve Heads and Rings. C. E. Paddock. Illustrates and describes details. 1800 w. Am Mach—Dec. 14, 1911. No. 28950.

Drawing a Flanged and Tapered Cylindrical Shell. Joseph V. Woodworth. Illustrated description of the successive operations and the tools used. 1200 w. Mach, N Y—March, 1912. No. 30918 C.

Milling Axial Teeth in Cutter and Reamer Blanks. George W. Burley. Explains an exact method of determining the depth of the cut required for any given conditions. Supplement. 1200 w. Mach, N Y—March, 1912. No. 30920 C.

Magazine Work on Screw Machine. S. Nevin Bacon. Illustrated description of work requiring assembling of two or more pieces, accomplished with the aid of magazine attachments on screw machines. 2500 w. Am Mach—March 7, 1912. No. 31072.

Assembling and Reaming. Topical discussion, Feb. 12, 1912. Ills. 8000 w. Jour W Soc of Engrs—May, 1912. No. 33688 D.

MACHINE WORKS AND FOUNDRIES

Calculating Change-Wheels for Taper Turning. George W. Burley. Mathematical explanation. Ills. 900 w. Mech Wld—June 14, 1912. No. 33933 A.

Laps for Cylindrical Surfaces. Illustrates and describes a system of laps which gives long service. 800 w. Am Mech—July 18, 1912. No. 34489.

Machinery Iron-Bodied Valves. Illustrates and describes methods employed in making large iron safety valves. 1000 w. Am Mach—July 25, 1912. No. 34739.

Making the "Universal" Hack-Saw Blade. Chester L. Lucas. Illustrated detailed description. 800 w. Mach, N Y—July, 1912. No. 34165 C.

A Few Universal Joint Operations. Ethan Viall. Illustrated description of fixtures and methods used. 1200 w. Am Mach—Aug. 22, 1912. No. 35310.

Chipping and Fitting. James Stormonth. Drawings and suggestions. 1800 w. Mech Wld—Sept. 6, 1912. No. 35995 A.

Making Tapes and Wooden Rules. Ethan Viall. Illustrates and describes processes of manufacture. 1500 w. Am Mach—Sept. 19, 1912. No. 36014.

Bolt and Nut Making at Gary, Indiana. Illustrates and describes the general plan of the works and equipment, and the arrangement for the systematic handling of the work. 2800 w. Ir Age—Oct. 3, 1912. No. 36559 C.

Making Automatic Drill Chucks. Ethan Viall. Illustrates and describes the principle tools and fixtures used. 3500 w. Am Mach—Oct. 31, 1912. No. 37087.

Machining a Segmental Flywheel. John Fredette. Illustrates and describes the operations, machines and tools used in machining and erecting a 28-ft. flywheel. 1500 w. Am Mach—Oct. 10, 1912. No. 36707.

Some Examples of Vertical Milling. A. J. Baker. Gives four examples representing various classes of work. Ills. 2500 w. Am Mach—Oct. 10, 1912. No. 36709.

Master Plate Work on a Vertical Miller. E. M. King. Describes the machining of curved and straight surfaces, and the locating and boring of holes. 1800 w. Am Mach—Oct. 24, 1912. No. 36951.

Methods and Tools in a Press Shop. F. A. Stanley. Illustrates and describes tools and practice in a St. Louis shop. 2000 w. Am Mach—Feb. 1, 1912. No. 30117.

Manufacturing an Adding Machine. F. A. Stanley. Illustrates and describes interesting methods and machines. 2000 w. Am Mach—Feb. 29, 1912. No. 30867.

Points in the Machining of Tapers. George W. Burley. Considers the position of the lathe tool in relation to the work. Ills. 1500 w. Mech Wld—Jan. 26, 1912. No. 30306 A.

Automatic Lathe Work. Abstract of a paper by P. V. Vernon, read before the Coventry Engng. Soc. Discusses the question of costs in determining what methods to use, and related topics. 1800 w. Mech Wld—Jan. 19, 1912. No. 30170 A.

Gray Iron Foundry Operating Economies. H. Cole Estep. Explains how the use of labor-saving machinery reduced producing costs. 3500 w. Ir Trd Rev—Feb. 22, 1912. No. 30707.

Tools and Methods of a Vermont Shop. Ethan Viall. Illustrates and describes jigs and tools used in a shop building wood-working machinery. 1200 w. Am Mach—Feb. 8, 1912. No. 30274.

Making the Press-Button Knife. G. P. Campbell. Illustrates and describes tools and operations. 2200 w. Mach, N Y—Feb., 1912. No. 30127 C.

Tools and Methods of the Goodman Mfg. Co. Edward K. Hammond. Illustrates and describes practice at this Chicago shop. 3000 w. Mach, N Y—Jan., 1912 No. 29281 C.

Making Mileage Recording Instruments. Illustrates and describes shop methods and manufacturing processes at Beloit, Wis. 1800 w. Ir Age—Jan. 4, 1912. (Special.) No. 29338 D.

A Missouri Gas Engine Factory. F. A. Stanley. Illustrates and describes tools and methods used in a Kansas City, Mo., shop. 1200 w. Am Mach—April 4, 1912. No. 31751.

Methods in a Gasoline Engine Shop. F. A. Stanley. Illustrates and describes tools and methods used in an Iowa factory. 1200 w. Am Mach—April 18, 1912. No. 32114.

Fitting Up Spare Engine Parts. J. Leslie. Describes the method used by a firm doing small marine work. Ills. 1000 w. Mech Wld — June 14, 1912. No. 33934 A.

Building Modern Marine Motors. Fred H. Colvin. Illustrates and describes methods and fixtures which have proved valuable. 2000 w. Am Mach—Oct. 17, 1912. No. 36804.

Gas Engine Work in the Otto Shop. Illustrates and describes features of interest in a shop system in Philadelphia. 1500 w. Am Mach—Oct. 3, 1912. No. 36448.

In a Nashville Automobile Factory. Ethan Viall. Illustrated description of shop practice and appliances. 1000 w. Am Mach—May 23, 1912. No. 33008.

Manufacturing Automobiles in Iowa. Illustrates and describes methods of machining cylinders for double-opposed engines. 2500 w. Am Mach—May 2, 1912. No. 32525.

Methods, Machines and Fixtures for Automobile Manufacture. F. B. Hays. The practice of the National Motor Vehicle Co., Indianapolis, Ind., is illustrated and described. 1500 w. Mach, N Y—Dec., 1911. No. 28546 C.

Methods of an English Motor Shop. I. W. Chubb. Illustrates and describes methods employed in the manufacture of 4-cylinder 15 h. p. motors. 3000 w. Am Mach—March 14, 1912. No. 31125.

A Kansas City Automobile Factory. F. A. Stanley. Illustrates and describes special tools used. 1500 w. Am Mach—March 28, 1912. No. 31538.

Milling Practice in the Reo Factory. Ethan Viall. Illustrates and describes a number of fixtures used. 2000 w. Am Mach—Aug. 8, 1912. No. 35090.

Motor Part Work at the Reo Factory. Ethan Viall. Illustrates and describes methods of boring cylinders, machining pistons, and other work. 2000 w. Power —Aug. 15, 1912. No. 35179.

The Building of Packard Motor Cars. Ethan Viall. Illustrates and describes processes used in a large Detroit factory. 1500 w. Am Mach—Sept. 12, 1912. No. 35858.

Manufacturing an All-Metal Racer. Ethan Viall. Illustrates and describes details of dies used to form some of the sheet-metal parts of a lever-propelled go-cart. 1200 w. Am Mach—Oct. 17, 1912. No. 36806.

Making Knight Motor Valve Sleeves. Ethan Viall. Illustrates and describes interesting shop practice in connection with the machining of cast-iron valve sleeves. 700 w. Am Mach—Feb. 1, 1912. No. 30115.

Methods of a Modern Magneto Shop. F. B. Hays. Illustrates and describes special processes, machines, and tools. 2500 w. Am Mach—Jan. 11, 1912. No. 29528.

Making the Jacobs-Shupert Firebox. J. F. Whiteford. Illustrates and describes forms and dies used which simplify the manufacture. 800 w. Am Mach—April 18, 1912. No. 32119.

Methods in 'Frisco Railroad Shops. Illustrates and describes methods and appliances. 800 w. Am Mach—April 25, 1912. No. 32295.

More Locomotive Shop Practice. Illustrates and describes time-saving devices and methods used at the shops of the C. & N.-W. Ry. 1500 w. Am Mach—Nov. 9, 1911. No. 27773.

Machining Locomotive Frames. Franklin D. Jones. Illustrates and describes the practice at the Juniata shops of the Pennsylvania R. R. 4500 w. Mach (Ry Ed)—March, 1912. No. 31095 C.

Methods in the "Katy" Railway Shops. F. A. Stanley. Halftones, line engravings and description of methods used. 1500 w. Am Mach—March 21, 1912. No. 31275.

Machining a Locomotive Crosshead. Franklin D. Jones. Illustrates and describes how a locomotive crosshead of the "alligator" type is machined. 1200 w. Mach (Ry Ed)—Sept., 1912. No. 35817 C.

Wheel and Axle Press Fits. Table giving data as used in different railroad shops. 500 w. Mach, N Y—Oct., 1912. No. 36453 C.

Making Repair Parts for Locomotives. Illustrates and describes methods and fixtures used in a Kansas shop. 1500 w. Am Mach—Feb. 29, 1912. No. 30868.

Jig-Boring at the United Shoe Machinery Co.'s Factory. Chester L. Lucas. Illustrates and describes methods used. 1500 w. Mach, N Y—May, 1912. No. 32516 C.

Boring Holes Accurately on the Miller. C. L. Goodrich. Illustrates and describes a novel method of locating jigs and similar work for the boring of bushing holes to exact center distances. 600 w. Am Mach —Nov. 16, 1911. No. 28057.

Some New Jigs and Methods. Illustrates and describes additional devices used in the shops of the Chicago and Northwestern Ry. 500 w. Am Engr & R R Jour—Nov., 1911. No. 27766 C.

Methods in a Southern Contract Shop. John S. Van Pelt. Illustrates and describes jigs and fixtures used in a repair shop. 2000 w. Am Mach—June 27, 1912. No. 33953.

Accurate Driller Work. Ralph C. Thompson. Considers the design of jigs to insure accurate reversing in the design of automobile-engine parts. Ills. 1500 w. Am Mach—Nov. 23, 1911. No. 28230.

Jig Work in a Shoe Machinery Plant. F. A. Stanley. Illustrates and describes work in the machine shop of the United Shoe Machinery Co. 3500 w. Am Mach—July 25, 1912. No. 34737.

Shop Practice of Walcott & Wood. Illustrates and describes jigs, fixtures, and methods used in making shapers, and other tools and work. 1200 w. Am Mach —Aug. 15, 1912. No. 35180.

Manufacturing Cream Separators. F. A. Stanley. Illustrates and describes standard and special tool equipment and methods used in an Iowa manufacturing shop. 1500 w. Am Mach—April 25, 1912. No. 32291.

Making Needles for Talking Machines. Fred H. Colvin. Illustrates and describes the process. 1500 w. Am Mach—May 9, 1912. No. 32665.

Making "Cygnet" Phonograph Horns. Illustrates and describes tools and methods used. 1500 w. Am Mach—July 18, 1912. No. 34490.

Making Victor Talking Machines. Ethan Viall. Illustrates and describes interesting features of a large talking machine factory. 3500 w. Am Mach—Aug. 29, 1912. No. 35495.

Building Ice Machinery in the West. F. A. Stanley. Illustrates and describes tools and methods used in an Omaha shop. 1000 w. Am Mach—May 9, 1912. No. 32667.

Watch Movement Manufacture. Douglas T. Hamilton. Illustrates and describes methods employed by the South Bend Watch Co. 3500 w. Mach, N Y—May, 1912. Serial. 1st part. No. 32514 C.

Watch Case Manufacture. Illustrates and describes types and methods. 1800 w. Mach, N Y — July, 1912. Serial. 1st part. No. 34159 C.

Making Paint in the Shop. S. M. Henry. Describes the necessary machines and explains the advantages. 2500 w. Am Mach—Nov. 23, 1911. No. 28229.

Fountain Pen Manufacture. Douglas T. Hamilton. Illustrates and describes methods employed by the L. E. Waterman Co. in the manufacture of fountain pens. 4000 w. Mach, N Y—Dec., 1911. No. 28538 C.

Fountain Pen Manufacture. Douglas T. Hamilton. Illustrates and describes methods used in making the L. E. Waterman gold pens. 2000 w. Mach, N Y—Jan., 1912. No. 29287 C.

Machining Typewriter Segments. Ethan Viall. Illustrates and describes automatic millers and other tools and their use. 1000 w. Am Mach—Nov. 30, 1911. No. 28599.

Making Automatic Sprinkler Heads. Fred H. Colvin. Illustrates and describes methods employed and punch press and screw-machine kinks. 2000 w. Am Mach —July 11, 1912. No. 34345.

Manufacturing a Shoe Machine Head. F. A. Stanley. Illustrates and describes details of tools employed and particulars of the inspector's gages for testing the accuracy. 1200 w. Am Mach—July 11, 1912. No. 34342.

Operations in a Printing Press Shop. Glenn Muffly. Illustrates and describes all the important shop operations in handling the work. 1200 w. Am Mach—July 4, 1912. No. 34200.

The Irish Home of the "Sirocco" Fan. Fred P. Strachan. Illustrates and describes the tools, methods, and shop practice of a large Irish engineering works. 2000 w. Am Mach—Aug. 22, 1912. No. 35309.

Magazine Attachments. Douglas T. Hamilton. Describes magazine attachments applied to the Brown & Sharpe automatic screw machine. Ills. 3500 w. Mach, N Y—Feb., 1912. Serial. 1st part. No. 30128 C.

Machining Venturi Meter Parts. Dana W. Pond. Illustrated account of methods used to finish parts of unusual size, intended for meters to be placed in the Catskill Aqueduct. 800 w. Am Mach—Feb. 15, 1912. No. 30421.

Shop Shelves

Multiple-Unit Steel Shelving for Shop Use. Illustrated description calling attention to their advantages. 5000 w. Automobile—June 27, 1912. No. 34108.

Shops

The Sulzer Works at Winterthur, Switzerland. Illustrations and notes of an important Continental plant. 500 w. Engineering Magazine—May, 1912. No. 32343 B.

The Sterling Telephone Works, Dagenham, Essex. Illustrated account of these new works. 1800 w. Elec Rev, Lond—April 12, 1912. No. 32252 A.

A Somersetshire Engineering Works. Illustrated description of the Nautilus works, Yeovil, and their operation and equipment. 3000 w. Engr, Lond—April 5, 1912. No. 32102 A.

New Structural Shop of the Hay Foundry & Iron Works at Newark. Illustrates and describes details of a steel and concrete building with two aisles, equipped with girder cranes and traveling wall jib cranes. 3000 w. Eng Rec—April 27, 1912. No. 32389.

A Modern Plant for the Manufacture of Boilers and Heavy Steel Plate Work. Illustrated description of a shop in Cleveland, Ohio. 1800 w. Boiler Maker—April, 1912. No. 31855.

A Southern Circular Saw Factory. Ethan Viall. Gives details of machines and methods used in making solid and inserted-tooth circular saws. Ills. 2500 w. Am Mach—May 2, 1912. No. 32524.

MACHINE WORKS AND FOUNDRIES

New Factory of Bosch Magneto Co. Illustrated description of a new factory at Springfield, Mass. 3300 w. Am Mach —May 16, 1912. No. 32869.

A Copper Country Machine Shop. Illustrated description of a well equipped shop for building and repairing mining machinery at Calumet, Mich. 2000 w. Am Mach—Nov. 9, 1911. No. 27771.

Machine Shops of Rumely Tractor Works. Illustrated description of the arrangement and equipment of machinery for making and erecting oil-pull tractors at La Porte, Ind. 3000 w. Ir Age—Nov. 2, 1911. No. 27636.

"Soo" Railway Shops in Minneapolis. F. A. Stanley. Special tools and methods are illustrated and described. 1500 w. Am Mach—Nov. 2, 1911. No. 27644.

The Upson Nut Company's Steel Plant. Illustrated detailed description of the plant and its equipment and arrangement. 3500 w. Ir Age—Nov. 2, 1911. No. 27635.

Upson Nut Co.'s Steel Works and Rolling Mill. Illustrated description of the open-hearth furnaces; blooming and merchant mills, heating furnaces cooling bed, etc. 7000 w. Ir Trd Rev—Nov. 2, 1911. No. 27655.

The American District Steam Company. Illustrated description of the new plant at North Tonawanda, N. Y., designed and equipped for the manufacture of machinery and materials of central steam heating systems. 1500 w. Ir Age—Dec. 14, 1911. .No. 28943.

What the Foundry Thinks of the Machine Shop. H. M. Ramp. Address before the Supts'. and Foremen's Club, Cincinnati, O. 5000 w. Ir Age—Dec. 21, 1911. No. 29105.

The Works of the National Brake & Electric Co. Illustrated description of the machine shop and storage warehouses of a large plant in Milwaukee. 3000 w. Ir Trd Rev—Nov. 30, 1911. No. 28572.

The Panama Canal Shops at Gorgona. Fred H. Calvin. Illustrates and describes the large shops which keep in repair the machinery used. 2500 w. Am Mach—Dec. 28, 1911. No. 29166.

Flexibility of Operations in Machine Shops. C. A. Tupper. Illustrated discussion of the ideal arrangement of tools that will effect the greatest manufacturing economies. 2500 w. Ir Trd Rev—Jan. 4, 1912. No. 29363.

A Model Manufacturing Establishment. Illustrated description of the new plant of the Best Manufacturing Co. at Pittsburgh. 1500 w. Cassier's Mag—Jan., 1912. Serial. 1st part. No. 29886 B.

Plant of the Best Manufacturing Company. Illustrated description of a plant at Oakmont, Pa., for making valves, pipe fittings, etc. 3000 w. Ir Age—Jan. 11, 1912. No. 29513 C.

Evansville Plant of the Bucyrus Company. Illustrated description of a new plant in Indiana, and its scheme of equipment. 2500 w. Ir Age—Jan. 4, 1912. (Special.) No. 29340 D.

An Interesting Shop in the Tropics. Fred H. Colvin. Illustrates and describes work handled in a shop near Havana, Cuba. 1200 w. Am Mach—Feb. 29, 1912. No. 30871.

The Plant Behind Cincinnati Millers. L. P. Alford. Illustrated description of interesting details of construction and equipment of the new shop of the Cincinnati Milling Machine Co. 3000 w. Am Mach—Feb. 22, 1912. No. 30691.

The New Plant of the Cincinnati Milling Machine Co. Illustrated detailed description of the plant at Oakley, Cincinnati. 3500 w. Mach, N Y—March, 1912. No. 30926 C.

A Modern Colorado Machine Shop. Fred H. Colvin. Illustrates some of the special machines and devices used in building the Leyner rock drill. 1200 w. Am Mach—March 28, 1912. No. 31536.

Shop Arrangement as a Factor in Efficiency. Irvin Haworth. Discusses points that should be considered in modern works. 2200 w. Mech Wld—May 24, 1912. No. 33457 A.

A Large, Modern Wisconsin Machine Tool Plant. Illustrated description of the works of the Gisholt Machine Tool Co., at Madison, Wis. 3500 w. Ir Trd Rev —May 30, 1912. No. 33328.

The Siemens Manufacturing Concerns in Greater Berlin. Illustrated article describing works for the manufacture of electrical and engineering apparatus. 3500 w. Elect'n, Lond — June 7, 1912. No. 33771 A.

The Growth of the Thyssen & Co. Machine Shop in Mülheim-Ruhr (Die Entwicklung der Maschinenfabrik Thyssen & Co., A. G., in Mülheim-Ruhr). A. Wallichs. Describes appliances introduced since the opening in 1871. Ills. 1400 w. Stahl u Eisen—May 23, 1912. No. 33505 D.

The American Bridge Company's Gary Shops. Illustrated description of shops aiming to provide the best possible handling facilities. 2500 w. Ir Age—July 4, 1912. No. 34249 C.

The Bridge and Structural Shops of the American Bridge Company at Gary. Illustrated description of the buildings, tools, and methods of work for shop units with an annual capacity of 120,000 tons. 3000 w. Eng Rec—June 29, 1912. No. 34116.

The Esslingen Machine Shops at Esslingen (Die Maschinenfabrik Esslingen in Esslingen). Alfred Widmaier. Illustrated description of these locomotive shops. 9600 w. Zeitschr des Ver deutscher Ing —June 8, 1912. No. 34548 D.

The Clock Factory of the Junghaus Bros., Schramberg (Die Uhrenfabriken von Gebrüder Junghaus A.-G., Schramberg). Alfred Widmaier. Illustrated description of this plant. 3500 w. Zeitschr. des Ver deutscher Ing—June 15, 1912. No. 34552 D.

The Robert Bosch Electrical Manufactory in Stuttgart (Die elektrotechnische Fabrik von Robert Bosch in Stuttgart). Alfred Widmaier. Description of plant and some of the apparatus turned out by it. Ills. 7000 w. Zeitschr des Ver deutscher Ing — June 22, 1912. No. 34555 D.

The Plant of the Daimler Motor Company at Stuttgart-Untertürkheim (Die Fabrik der Daimler-Motoren-Gesellschaft in Stuttgart-Untertürkheim). Robert Uhland. Description of this plant and some of its work. Ills. 3000 w. Zeitschr des Ver deutscher Ing—June 22, 1912. No. 34554 D.

New Bridge Shops at Gary, Ind. Illustrates and describes special features of design and equipment of this large plant. 3000 w. Eng News—Aug. 8, 1912. No. 35095.

The Fried. Krupp Establishments, Essen. Illustrated historical review of the development of this great German industry which celebrates its 100th anniversary of its foundation. 11000 w. Engng —Aug. 19, 1912. Serial. 1st part. No. 35300 A.

The Schimmel Works at Chemnitz (Das Schimmelwerk in Chemnitz). G. Rohn. Illustrated description of the layout of this manufacturing plant. 4500 w. Zeitschr des Ver deutscher Ing—July 13, 1912. No. 35536 D.

A Large Missouri Machinery Building Plant. Illustrated description of the new plant of the Fulton Iron Works, St. Louis. 3500 w. Ir Trd Rev—Sept. 26, 1912. No. 36347.

A Modern New England Manufacturing Plant. Illustrated description of the works of the Bridgeport (Conn.) Screw Co. 2500 w. Ir Trd Rev—Sept. 5, 1912. No. 35765.

A Modern Factory. F. Southey. Illustrated description of building recently erected for Siemens Bros. & Co., Woolwich. 1500 w. Engr, Lond—Sept. 27, 1912. No. 36736 A.

Machine Shop for Engine Building. Illustrated description of a new shop at La Porte, Ind. 2000 w. Eng Rec—Sept. 28, 1912. No. 36400.

The Baird Machine Company's New Shops. Illustrated description of new works at Bridgeport, Conn., as an example of modern design and practice. 2500 w. Ir Age—Oct. 17, 1912. No. 36867 C.

See also Industrial Works, under *Machine Works and Foundries;* Shops, under RAILWAY ENGINEERING, *Motive Power and Equipment;* also Shops, under STREET AND ELECTRIC RAILWAYS.

Special Tools

Milling Fixtures of Various Types. Lucian L. Haas. Gives points for consideration in the design of special tools for a given piece of work, the operation of cutters and the application of gages, etc. Ills. 2500 w. Am Mach—July 4, 1912. No. 34198.

A Few Shipyard Machines and Devices. Ethan Viall. Illustrates and describes special machines for various kinds of work. 1000 w. Am Mach—July 11, 1912. No. 34344.

Spike Machine

The Farrow-Spike Machine. Illustrates and describes interesting details of an improved automatic type of the Farrow railroad spike machine. 1200 w. Ir Age —May 16, 1912. No. 32901 C.

Spindles

Recent Lathe Spindles (Neuere Drehbank-Spindelstöcke). A. Johnen. Discusses modern spindle arrangements. Ills. 1800 w. Zeitschr für Werkzeug— Jan. 15, 1912. No. 30578 D.

Standardizing

Standardizing Elementary Parts. Rudolph L. Hanau. Shows how the work of designers and draftsmen can be simplified by using standards and the important advantages. 2500 w. Am Mach—June 6, 1912. No. 33432.

Steel Balls

The Manufacture of Steel Balls. Robert H. Grant. The first of a series of articles on steel-ball making, the machines and methods used, etc. Ills. 5000 w. Mach, N Y—Feb., 1912. Serial. 1st part. No. 30120 C.

Steel Plants

See same heading, under MINING AND METALLURGY, *Iron and Steel.*

Stock Taking

Stock System of a Modern Factory. W. R. Emig. Explains method of keeping track of stock. 800 w. Am Mach—Dec. 7, 1911. No. 28635.

Tapers

Tapers. George W. Burley. Critical discussion of the so-called "standard" tapers which are not "standard." 800 w. Mech Wld — May 24, 1912. No. 33455 A.

Taps

See Screws, under *Machine Works and Foundries.*

Tempering

See Steel Making, under MINING AND METALLURGY, *Iron and Steel.*

Threading

Rolling Threads in Brass Shells. F. G. Stevens. Illustrates and describes a method of obtaining a thread almost equal to a screw-cut thread. 1500 w. Mech Wld—Aug. 30, 1912. No. 35882 A.

Toolroom

A Typwriter Factory Toolroom. Ethan Viall. Illustrates and describes machines and methods used in a factory at Bridgeport, Conn. 1200 w. Am Mach—Aug. 1, 1912. No. 34994.

Tools

Cutter Heads for Use in Turret Lathes. E. A. Ermold. Illustrated description of their construction and use. 1200 w. Am Mach—Nov. 30, 1911. No. 28601.

Tools for Building Universal Grinders. F. A. Stanley. Illustrates and describes jigs and fixtures and their use. 2500 w. Am Mach—Nov. 30, 1911. No. 28598.

Tools for Locating Holes in Jigs. F. A. Stanley. Describes a system of transfer plates used with drills and reamers for locating hole centers and finishing holes in jig plates, etc. Ills. 1000 w. Am Mach—Dec. 7, 1911. No. 28634.

Expanding Tools. S. Jones. Illustrates and describes some forms of these tools, explaining their usefulness. 1600 w. Mech Wld—Nov. 17, 1911. No. 28353 A.

Cam Cutting Machine; Other Tools. Illustrates and describes special tools and their operation. 1200 w. Am Mach—Nov. 16, 1911. No. 28060.

Cutting Tools. Dempster Smith. Read before the Mancheser Assn. of Engrs. Experimental investigation of the forces acting on cutting tools of the form best adapted for durability, also some durability experiments. Ills. 3000 w. Mech Engr—Nov. 3, 1911. Serial. 1st part. No. 28026 A.

Tools for Westinghouse Turbines. John Fredette. Illustrates and describes interesting tools used in making stationary and rotating elements. 2500 w. Am Mach—Jan. 4, 1912. No. 29347.

The J. E. Reinecker Works at Chemnitz-Gablenz. C. A. Tupper. Illustrates and describes modern German methods and design in the production of high-grade shop tools. 2500 w. Mach, N Y—Jan., 1912. No. 29280 C.

Design of a Punch and Shear. N. Leerberg. Gives method, factors of design, and formulae used in designing a combination punch and shear. Ills. 2000 w. Am Mach—Feb. 29, 1912. No. 30870.

Moon Motor Car Jigs and Fixtures. Illustrates and describes special tools used in a St. Louis shop. 1000 w. Am Mach—Feb. 29, 1912. No. 30869.

Oil Groove Cutting Tool. Douglas T. Hamilton. Illustrated description of a turret tool for the Brown & Sharpe automatic screw machine. 1500 w. Mach, N Y—March, 1912. No. 30922 C.

Phonograph Machines and Devices. Ethan Viall. Illustrates and describes tools used in the production of phonograph parts. 2000 w. Am Mach—March 28, 1912. No. 31537.

Tools for Adding Machine Work. F. A. Stanley. Illustrates and describes interesting press tools for special work. 2500 w. Am Mach—March 14, 1912. No. 31126.

Heavy Driller in Automobile Work. Illustrated description of methods and tools used in machining automobile cylinders and brake support forgings on modern high-power drillers. 1000 w. Am Mach—March 14, 1912. No. 31127.

Special Tools Used in the Making of Dental Chairs. Carroll Ashley. Briefly describes the construction of dental chairs, and the tools used in the making. Ills. 3500 w. Mach, N Y—March, 1912. No. 30917 C.

Some Special Tools of British Design. Illustrated descriptions of a lathe, planer-slotting machine, and special radial drill. 3500 w. Prac Engr—Apri 5, 1912. No. 31986 A.

Subpress Tools for Watch Rollers. A. M. Cahill. Gives details of the making of a precision die for watch work. Ills. 2700 w. Am Mach—April 18, 1912. No. 32118.

Manufacturing a Lapel Button-Back. F. A. Stanley. Illustrates and describes the tools used in producing this device. 4000 w. Am Mach—July 4, 1912. No. 34199.

Special Tools in the 'Frisco Shops. F. A. Stanley. Illustrations with brief descriptions. 1000 w. Am Mach—May 2, 1912. No. 32528.

A Geared Tap Wrench. Drawings and description. 1000 w. Prac Engr—June 14, 1912. No. 33927 A.

Tools in a Cream Separator Plant. F. A. Stanley. Illustrates and describes interesting jigs and fixtures and special tools. 2000 w. Am Mach—June 20, 1912. No. 33800.

The Handling of "High-speed" Steel Cutters. James F. Hobart. Discusses the wearing quality of tools, difference between wood-working and metal-working, etc. 3300 w. Wood Craft—Aug., 1912. No. 34918.

When Modern Machine Tools Fail to Save. Sterling H. Bunnell. Explains why modern machines sometimes show at a disadvantage compared with ordinary machinery. 2000 w. Ir Age—Aug 1, 1912. No. 34992 C.

Tool Production for Gasoline Motors. F. B. Hays. Illustrates and describes methods used in a large automobile shop, and some of the tools. 1200 w. Am Mach—Aug. 1, 1912. No. 34996.

Some Tools Used in the Manufacture of Small Steel Balls. A. G. Black. Illustrates and describes methods used for balls of small size. 1200 w. Mach, N Y—Aug., 1912. No. 34925 C.

Subpress Tools for Watch Clicks. A. M. Cahill. Illustrates and describes details. 2200 w. Am Mach—Aug. 8, 1912. No. 35093.

Tools for Perforating Lamp Burner Parts. Charles Doescher. Illustrates and describes dies for perforating the sides of cylindrical work. 6500 w. Mach, N Y—Aug., 1912. No. 34923 C.

Special Tools Used on Otis Elevators. Glenn Muffly. Illustrates and describes a number of special tools for milling, boring and tapping, cutting-off, multiple drilling and die casting practice, etc. 2500 w. Am Mach—Sept. 26, 1912. No. 36216.

Tubing

Mannesman Seamless Steel Joint Tubes. Illustrates and describes the earlier and later methods employed in their production. 1000 w. Ir Age—July 18, 1912. No. 34638 C.

Machine for Forming Flexible Tubing. Richard Toeplitz. Drawings and description of the machine and its operation. 1200 w. Mach, N Y—June, 1912. No. 33347 C.

Turrets

An Innovation in Turret Design. Illustrates and describes the method of design, construction, and tests of a new turret built by the Bullard Company. 2500 w. Am Mach—Feb. 1, 1912. No. 30114.

Vacuum Cleaners

The Vacuum Cleaner in the Shop. Ethan Viall. Illustrates and describes three installations for different purposes. 600 w. Am Mach—Jan. 25, 1912. No. 30112.

Waste Handling

Choice of Exhausters with Regard to Size, Capacity, Speed and Power. George H. Gibson. Gives useful data on the handling of shavings, sawdust, etc. 2000 w. Wood Craft—Aug., 1912. No. 34919.

Waste Removal

Removal of Refuse and Waste by Fans and Blowers. F. R. Still. Read before the Am. Soc. of Heat. & Vent. Engrs. Discusses the application of exhaust fans to the handling of refuse and related matters. Ills. 4500 w. Heat & Vent Mag—Oct., 1912. No. 36975.

Welding

Acetylene and Its Uses. Information concerning this gas, and its wide use in welding. 2000 w. Automobile—Nov. 23, 1911. No. 28297.

Oxy-Acetylene Process of Welding and Cutting. Henry Cave. Discusses the subject with special reference to the Davis-Bournonville equipment. 1600 w. Ir Trd Rev—Jan. 18, 1912. No. 29694.

Oxy-Acetylene Welding and Cutting. J. A. Warfel. Descriptive account of work in this field, followed by general discussion by other members. Ills. 6000 w. Pro Ry Club of Pittsburgh—Jan. 26, 1912. No. 31297 C.

Welding Brass by the Oxy-Acetylene Blowpipe. From *The Ironmonger*. Explains some of the causes of failure and how they may be avoided. 600 w. Brass Wld—June, 1912. No. 33840.

Oxy-Acetylene Welding and Cutting in Railroad Work. C. E. Lester. Illustrates and describes work, discussing right and wrong methods. 1500 w. Boiler Maker—Aug., 1912. No. 35010.

Oxy-Acetylene Welding of Tanks and Retorts. J. F. Springer. A chapter from a forthcoming book on "Oxy-Acetylene Torch Practice." Ills. 2500 w. Mach, N Y—Aug., 1912. No. 34927 C.

Oxyacetylene Welding and Cutting. M. S. Plumley. Abstract of a paper before the Am. Soc. of Steel & Iron Elec. Engrs. Describes applications and gives representative costs. 2500 w. Am Mach—Oct. 10, 1912. No. 36712.

Pre-Heating Metals to Be Welded by Oxy-Acetylene Process. J. F. Springer. Explains the object of pre-heating and describes the methods and appliances used. Ills. 2000 w. Mach, N Y—Oct., 1912. No. 36455 C.

Manufacture of Tubing by Autogenous Welding. J. F. Springer. Practice and methods used in Germany are illustrated and described. 1200 w. Mach, N Y—Jan., 1912. No. 29282 C.

Autogenous Welding for Repairing Boilers. Henry Cave. Describes the equipment and methods. Ills. 1700 w. Locomotive—April, 1912. No. 33186.

The Goldschmidt Reaction. H. Stanley Redgrove. An explanation of its theory and applications in practice. Reprinted from *Knowledge*. 2500 w. Sci Am Sup—Nov. 25, 1911. No. 28284.

Thermit Welding. G. E. Pellissier. Illustrated review of the process, methods of applying it, and its value in repair work. 1500 w. Jour Am Soc of Mech Engrs—Jan., 1912. No. 29927 D.

Electric Welding (Elektrisches Schweissen). B. Loewenberg. A description of the various electric welding machines in modern practice. Ills. Serial. 1st part. 7200 w. Zeit des Ver Deutscher Ing—Oct. 7, 1911. No. 28439 D.

The Kjellberg Electric-Welding Process. Describes this system which employs an electric arc and metallic electrodes of a special character. Ills. 1000 w. Engng—Nov. 24, 1911. No. 28666 A.

Arc Welding. C. B. Auell. Illustrated review of the three different processes of welding by use of the electric arc, and the applications. 2500 w. Jour Am Soc of Mech Engrs—Jan., 1912. No. 29928 D.

Electric Welding. O. S. Beyer, Jr. Describes typical processes of electric welding, their applications especially in the railroad shop, explaining their possibilities and limitations. Ills. Also general discussion. 12500 w. Pro N Y R R Club—Feb. 1, 1912. No. 31433.

Electric Welding. J. A. Shaw. From a paper before the Can. Ry. Club. Reviews briefly the various processes of electric welding, and some recent developments. Diagrams. 2500 w. Ry Mas Mech—March, 1912. No. 31222.

Electric Welding and Its Application to the Metal Trades. Explains the theory of electric welding and illustrates and describes work. 1000 w. Brass Wld—Aug., 1912. No. 35326.

Welding by Electricity. Illustrated description of a plant at Cleveland, Ohio, and the work accomplished. 3000 w. Sci Am Sup—Aug. 17, 1912. No. 35217.

Modern Welding Processes with Special Reference to Flame Welding. H. R. Cobleigh. Brief review of the various processes, especially the different kinds of torch or blowpipe welding. Ills. 7000 w. Jour Am Soc of Mech Engrs—Jan., 1912. No. 29926 D.

The Theory of Steel Welding and Some Practical Applications (Die Theorie des Schweissens von Stahl und ihre praktische Anwendung). Max Bermann. Review of some modern methods with illustrations of results obtainable. 7200 w. Zeitschr des Ver deutscher Ing—March 30, 1912. No. 32047 D.

A Theory of the Welding of Steel and Its Practical Application. Max Bermann. Condensed trans. from *Die Zeit des Ver. deut. Ing.* Explains phenomena observed in welding various sorts of steel and explains conclusions. Ills. 4500 w. Sci Am Sup—June 22, 1912. No. 33868.

Welding Up of Blowholes and Cavities in Steel Ingots. J. E. Stead. Read before the Iron & Steel Inst. Describes experiments made to determine whether real blowholes in crucible steel ingots could be perfectly welded. Ills. 2500 w. Mech Engr—May 10, 1912. No. 32978 A.

Welding as a Caulking Process. James Steelman. Illustrates and describes what may be done in making tight joints under high pressure. 1800 w. Cassier's Mag—Aug., 1912. No. 36296 B.

A New Welded Joint (Ein Neuer Schweissstoss). Herr Waltmann. Discusses the process invented by Dr. Donath in which arched rail plates of special form and substance are welded to the rails at the joint. Ills. 4400 w. Elek Kraft u Bahnen—Aug. 24, 1912. No. 36153 D.

The Joining of Metals. Alex. E. Tucker. Read before the Inst. of Metals. Discusses the physical processes, such as welding and brazing, and the commercial applications. 4500 w. Mech Engr—Oct. 4, 1912. Serial. 1st part. No. 36843 A.

Experiments on the Strength and Fatigue Properties of Welded Joints in Iron and Steel. Thomas Ernest Stanton and John Robert Pannell. With abstract of discussion. A comparison of strength and fatigue properties of welded joints in iron and steel made by different processes, with the properties of the unwelded material. 79 pps. Inst of Civ Engrs, No. 3977—Dec. 12, 1911. No. 37079 N.

Welding Locomotive Repair Parts. H. W. Jacobs. Explains the possibilities and economies of oxy-acetylene in railroad shops. 3300 w. Am Mach—Nov. 16, 1911. No. 28056.

A Repair of a 9500-ft. Leaky Steel Plate Pipe Line at Boulder, Colo., by Oxy-Acetylene Welding. Louis Elliott. Illustrates and describes the method of welding and details of the work. 2500 w. Eng News—Nov. 16, 1911. No. 28082.

An Unusual Shaft Welding Job. H. R. Setz. Illustrates and describes the building up of a large gas engine crane shaft by the oxy-acetylene welding process. 800 w. Am Mach—June 20, 1912. No. 33804.

See also Pipe Welding, under CIVIL ENGINEERING, *Water Supply*, and Paris, under STREET AND ELECTRIC RAILWAYS.

Wire Drawing

Wire Drawing. Erik Oberg. Illustrates and describes methods and machines used by the Driver-Harris Wire Co., Harrison, N. J. 5000 w. Mach, N Y—Oct., 1912. No. 36452 C.

Some Aspects of Wire-Drawing. Percy Longmuir. Read before the Iron & Steel Inst. States some of the wire-drawing problems and investigations made with results. 3000 w. Ir & Coal Trds Rev—Oct. 4, 1912. No. 36925 A.

The Theory of the Drawing of Metal Wires (Teoria della trafilatura dei file metallici). Ernesto Ascione. Mathematical discussion on tensile effects. Diagrams. Serial. 1st part. 1800 w. Industria—April 28, 1912. No. 32794 D.

Tools for Four-Slide Automatic Wire-Forming Machine. Chester L. Lucas. Illustrates and describes the important features and a few sets of wire-forming tools. 4000 w. Mach, N Y—Feb., 1912. No. 30121 C.

Wood Planing

Eight-Roller Wood-Planing Machine. Illustrated description of a recent English design which adopts the use of eight rolls. 1200 w. Engr, Lond—April 12, 1912. No. 32285 A.

MATERIALS OF CONSTRUCTION

Alloys

Further Notes on the Nature of Solid Solutions. C. A. Edwards. Read before the Inst. of Metals. A reply to a discussion of an earlier paper, especially considering the bearing of the phase rule upon the question. 3000 w. Engng—Nov. 17, 1911. No. 28360 A.

Alloys. Albert A. Somerville. Remarks on this unlimited field for research, and the formation of alloys. 2200 w. Sci Am Sup—Nov. 18, 1911. No. 28065.

The Influence of Remelting and Cooling upon the Chemical and Mechanical Properties of Alloys (Einfluss der Umschmelzung und Abkühlung auf die chemischen und mechanischen eigenschaften von Lagermetallen). G. Goldberg. Discussion. Serial. 1st part. 1700 w. Giesserei-Zeitung—Jan. 15, 1912. No. 30575 D.

The Making of Alloys from Metals and Ores. Walter J. May. Discusses old and new foundry practice. 2500 w. Castings—Aug., 1912. No. 35261.

The Determination of Nickel in Alloys. S. W. Parr and J. M. Lindgren. Calls attention to the merits of the glyoxime method for the determination of nickel. 1000 w. Am Brass Found Assn—May, 1911. No. 27677 N.

Volume Changes in the Alloys of Copper with Tin. J. L. Haughton, and T. Turner. Read before the Inst. of Metals. Illustrated report of research work on the changes in length which occur in a cast bar during and after solidification. 2500 w. Engng—Nov. 3, 1911. Serial. 1st part. No. 28039 A.

Copper and Its Alloys in Early Times. William Gowland. Pres. address (slightly abridged) to the Inst. of Metals, Jan. 16, 1912. Reviews the early history and methods followed by prehistoric man for the manufacture of weapons and instruments. Ills. 2500 w. Engr, Lond—Jan. 19, 1912. Serial. 1st part. No. 30183 A.

The Influence of Oxygen on Copper Containing Arsenic or Antimony. R. H. Greaves. Abstract of paper read before the Inst. of Metals. Describes research work and results. Ills. 3000 w. Mech Engr—Feb. 9, 1912. No. 30666 A.

Further Experiments on the Critical Point at 470 Deg. Cent. in Copper-Zinc Alloys. H. C. H. Carpenter. Read before the Inst. of Metals. A report of research work and study of this alloy, with photomicrographs showing its appearance. 5000 w. Engng—Feb. 23, 1912. No. 31043 A.

German Silver and Similar Alloys (Ueber Neusilber und ähnliche Legierungen). H. Kloss. Giving percentage content of various alloys. Serial. 1st part. 2300 w. Giess. Zeit—May 1, 1912. No. 33507 D.

Handling the Copper-Tin Alloys in the Brass Foundry. H. Kloss, in *Giesserei Zeit.* Considers the influence of tin on the properties of the bronze. 1200 w. Castings—July, 1912. No. 34682.

The Use and Value of Common Salt in Melting Yellow Brass, Composition, and other Copper Alloys. Explains the theory and method of using common salt in brass melting, and the advantages. Ills. 1500 w. Brass Wld—Sept., 1912. No. 36037.

A New Process for Refining Antimonial-Lead and Other Lead Alloys. Describes the apparatus and process of refining. Ills. 900 w. Brass Wld—Nov., 1911. No. 28250.

Alloys of Aluminum and Zinc. Dr. Walter Rosenheim and S. L. Archbutt. Summary of the tenth report to the Alloys Research Committee of the Inst. of Mech. Engrs. on the alloys of aluminum and zinc, with an appendix on a ternary alloy of aluminum with zinc and copper. 5000 w. Inst of Mech Engrs—April 19, 1912. No. 32847 N.

Institution of Mechanical Engineers. A summary of the main points of the tenth report to the Alloys Research Committee, presented by Dr. Walter Rosenheim and S. L. Archbutt, showing its nature and scope. 500 w. Engr, Lond—April 26, 1912. No. 32849 A.

The Production of Porous Metals. H. I. Hannover. A novel application of eutectic alloys for the production of storage battery plates. Ills. 900 w. Met & Chem Engng—Sept., 1912. No. 35723 C.

The Effect of Phosphorus on Composition and the Appearance of the Ingot Metal Surface Containing It. Describes the effect when too much phosphorus is used. Ills. 1000 w. Brass Wld—Dec., 1911. No. 28998.

Applied Metallography for the Foundryman. Considers the structure of metal alloys and the methods that lead to their formation. Ills. 2000 w. Castings —Jan., 1912. No. 29690.

Micrographic Examination of Failures. J. S. Glen Primrose. Abstract of lecture before Glasgow Univ. Engng. Soc. Explains the methods adopted for investigating failures of engineering materials, especially the alloys of iron and steel. Ills. 2200 w. Can Engr—Feb. 8, 1912. No. 30372.

On the Behavior of Certain Alloys When Heated in Vacuo. Thomas Turner. Read before the Inst. of Metals. A report of experimental investigation of a number of alloys. 2500 w. Mech Engr—Jan. 26, 1912. No. 30302 A.

A Study of the Properties of Alloys at High Temperatures. G. D. Bengough. Read before the Inst. of Metals. Introductory explanation, with an account of research work, discussing only the properties of maximum stress, elongation, and contraction of area under static tension. Ills. 6000 w. Engng—Jan. 19, 1912. Serial. 1st part. No. 30177 A.

Variations in the Length of Sound in Alloys in Functions of Their Temperatures (Variations de la Durée du Son des Alliages en Fonction de la Température). Felix Robin. Arguments along the same lines as previous determinations on steel, covering copper, zinc, aluminum, magnesium and their alloys. Diagrams. 3500 w. Rev de Metall—August, 1912. No. 35575 H.

The Practical Determination of the So-Called "Formation" Diagram of Metallic Alloys for the Foundry Expert (Die praktische Bedeutung der sogenannten Zustandsdiagramme der Metallegierungen für den Giessereifachmann). W. Guertler. A study of the metallography of alloys. Ills. Serial. 1st part. 6000 w. Giesserei-Zeitung—March 1, 1912. No. 31371 D.

Vanadium Alloys and Their Application to Non-Ferrous Metals. C. Powell Karr. Explains their avidity for troublesome gases and their use for this purpose in foundry practice. 1000 w. Brass Wld—Aug., 1912. No. 35325.

A New Alloy of High Tensile Strength. C. Vickers. Information concerning chromax bronze. 1500 w. Foundry—March, 1912. No. 30956.

See also Metal Testing, under *Measurement.*

Alloy Steels

Concerning Alloys (Ueber Legierungen). Hugo Kühl. Review of present practice in the manufacture of alloy steels. Serial. 1st part. 1400 w. Giesserei Zeit—April 1, 1912. No. 32019 D.

Recognizing Alloy Steels by Ingot Structure. E. T. Edwards. Discusses visual and laboratory selections of steels, requirements of tool and other steels and the alloys to meet them. Ills. 2000 w. Ir Age—Feb. 15, 1912. No. 30415.

Crystallization and Structure of Slowly Cooled Steel (Sur la Cristillisation et Structure des Aciers Refroidis Lentement). M. N. T. Belaiew. Especially concerning structure and crystal formation in alloys of iron and carbon. Ills. 6500 w. Rev de Metall—May, 1912. No. 32755 H.

The Chemical and Mechanical Relations of Iron, Vanadium, and Carbon. J. O. Arnold and A. A. Read. Read before the Iron & Steel Inst. A continuation of the author's work in this field giving an account of a number of experiments made to determine the composition, the mechanical properties, and the microscopical features. Ills. 2500 w. Ir & Coal Trds Rev—May 10, 1912. No. 33017 A.

Steel and Its Heat Treatment. Robert R. Abbott. Extracts from a paper read before the Cleveland Engng. Soc. Discusses alloys and critical temperatures, and results of heat treatment. 2000 w. Ir Age—May 9, 1912. No. 32660 C.

Natural Alloy Steel. E. F. Lake. Considers steels manufactured from ore in which nickel and chromium are alloyed by nature, giving information concerning them. 4000 w. Mach, N Y—Aug., 1912. No. 34930 C.

Analysis and Heat Treatment of Low-Carbon and Alloy Steels. Douglas T. Hamilton. Illustrates and describes practice in steel analysis in a shop at Jackson, Mich. 3000 w. Mach, N Y—Aug., 1912. No. 34931 C.

Properties of Nickel Cast Steel. Edwin F. Cone. Gives photomicrographs and results of tests. 800 w. Ir Age—Aug. 8, 1912. No. 35078 C.

Notes on the Alloys of Iron and Carbon (Recherches sur les Alliages de Fer et Carbone). M. Wittorf. Extracts from a paper published by *l'Academie d'Artillerie*, comprising a metallurgical study of these alloys. Ills. 5300 w. Rev de Metall—August, 1912. No. 35574 H.

The Magnetic Properties of Manganese and Nickel Steels. S. Hilpert and W. Mathesius. Read before the Iron & Steel Inst. A report of investigations and results. Ills. 1800 w. Ir & Coal Trds Rev—Oct. 4, 1912. No. 36928 A.

See also Cast Iron, Metallography, and Steel, under *Materials of Construction.*

Aluminum

Modern Uses of the Metal Aluminum. Richard Seligman. From *Science Progress.* Illustrates and describes various applications to which its mechanical and chemical properties are adapted. 5500 w. Sci Am Sup—June 29, 1912. No. 33989.

Elements Entering Into the Decomposition of Aluminum (Welche Bestandteile wirken zersetzend auf das Aluminium ein?). G. Goldberg. Treating on the chemical action produced in cooking utensils. 2800 w. Giess Zeit—Sept. 1, 1912. No. 36609 D.

The Manufacture of Aluminum Paper and Powder (La Fabrication du Papier et de la Poudre d'Aluminium). Leon Guillet. Description of the mechanical appliances at two French plants for the production of this novel material. Ills. 6000 w. Rev de Metallurgie—March, 1912. No. 31403 H.

Aluminum in the Brewing Industry. C. Bleisch. An account of its use for fermenting, storage vessels and other parts. 2500 w. Sci Am Sup—March 30, 1912. No. 31647.

See also Castings, under *Machine Works and Foundries.*

Ancient Iron

Sinhalese Iron and Steel of Ancient Origin. Sir Robert Hadfield. Read before the Iron & Steel Inst. Describes interesting specimens found in Ceylon and gives information of interest concerning articles in the Colombo Museum, and opinions of various authorities. Ills. 11000 w. Ir & Coal Trds Rev—May 10, 1912. No. 33014 A.

Bakelite

Uses of Bakelite for Acid-proof Linings and Other Chemical Purposes. Describes two new varieties of liquid bakelite and their uses. 2000 w. Met & Chem Engng—Jan., 1912. No. 29814 C.

Brass

Brass: Its Manufacture and Practical Applications. J. J. Edwards. Lecture delivered before the Lond. and Dist. Branch of the British Found. Assn. Information concerning methods and utilization. 3000 w. Mech Engr—Feb. 23, 1912. No. 31027 A.

Oxygen in Brass. Thomas Turner. Read before the Inst. of Metals. Discusses briefly the occurrence and estimation of oxygen. 1500 w. Engng—Sept. 27, 1912. No. 36734 A.

Red Brass Ingots. H. C. Parrock. Explains the advantages of these ingots, how to obtain uniformity, and related matters. 1200 w. Brass Wld—Jan., 1912. No. 29877.

The Influence of Tin and Lead on the Microstructure of Brass. F. Johnson. Read before the Inst. of Metals. Describes a series of experiments made to determine the exact relations between tin and lead when occurring together in brass. Ills. 1500 w. Mech Engr—Feb. 9, 1912. No. 30665 A.

Standard Brass Foundry Mixtures and Method of Making Them. Erwin S. Sperry. Information concerning the non-ferrous metal mixtures used in the brass foundry. Ills. 4000 w. Brass Wld—Feb., 1912. Serial. 1st part. No. 30472.

The Season Cracking of Brass and Other Non-Ferrous Metals and Alloys, as Caused by Mercury. Erwin S. Sperry. Explains what season-cracking is, and discusses the cause. Ills. 2000 w. Brass Wld—Oct., 1912. No. 36965.

Breakages

See Electrical Machinery, under POWER AND TRANSMISSION.

Brick

Bauxite Brick for Kiln or Furnace Lining. S. R. Stone. Information concerning its successful use as a refractory material, its preparation, etc. 2500 w.

Rev—Oct. 4, 1912. No. 36924 A.

Min & Engng Wld—Aug. 24, 1912. No. 35433.

Briquettes

The Denison-Korte Briquetting Machine for Metal Borings. Illustrated description. 1000 w. Ir & Coal Trds Rev—Aug. 23, 1912. No. 35764 A.

Bronze

Effect of Repeated Melting on Manganese Bronze. J. L. Jones. Reports a series of tests and conclusions. Also discussion. 1000 w. Am Brass Found Assn—May, 1911. No. 27678 N.

The Pouring and Melting Points of Some High-Grade Bronzes. C. P. Karr. Describes experiments on the pouring temperatures of various bronzes under foundry conditions, and the melting temperatures under laboratory conditions. Also discussion. 2000 w. Am Brass Found Assn—May, 1911. No. 27675 N.

Difficulties of Casting Aluminum Bronze. A. L. Brassiere. Suggestions from the writer's experience. 1500 w. Foundry—Nov., 1911. No. 27685.

Experiments on the Wear of Bronzes (Essais sur l' Usure des Bronzes). Mm. Portevin and Nusbaumar. With reference to bronzes of differing chemical compositions with photomicrographs. Ills. 7000 w. Rev de Metallurgie—Feb., 1912. No. 31393 H.

Cast Iron

The Physical Properties of Cast Iron. John Jermain Porter. Read before the Pittsburgh Found. Assn. Gives facts showing their independence of the chemical composition of pig iron and their relation to methods of blast furnace operation. 3500 w. Ir Age—Nov. 16, 1911. No. 28054.

Typical Cast Iron Uses and Applicable Tests. John Jermain Porter. Read at the Int. Cong. for Test. Mat. Explains how cast iron sections are variously employed in the United States, and gives suggestions for additional quality tests. 3000 w. Ir Trd Rev—Sept. 5, 1912. No. 35768.

Cast Iron in Theory and Practice. E. Adamson. Deals with the theories for working to analysis. General discussion of methods. Ills. 16500 w. Jour W of Scotland Ir & St Inst—Nov., 1911. No. 30899 N.

A New Theory Considered for Cast Iron Testing. From *Stahl und Eisen*. Considers the influence of the method of pouring the casting and time of cooling. Gives results of tests and conclusions. 2000 w. Castings—May, 1912. No. 32966.

The Physical and Chemical Properties of Cast Iron (Ueber die physikalischen und chemischen Eigenschaften des Gusseisens). W. Venator. Review and discussion on article by John J. Porter in *Foundry Trade Journal*. 2500 w. Giess Zeit—May 1, 1912. No. 33508 D.

The Constitution of Cast Iron. Abstract of a paper by W. H. Hatfield, read before the British Found. Assn., dealing with the constituents of cast iron, and some of the changes produced by heat treatment. 1500 w. Foundry—Aug., 1912. No. 34962.

Segregation and Shot in Iron. E. L. Rhead. Abstract of paper read before the British Found. Assn. Discusses the physical properties, carbon concentration, and related matters. 2000 w. Foundry—April, 1912. No. 31699.

Tests of Chillable Irons. Thomas D. West. Gives report of tests of the relative strength of gray iron and of part or wholly chilled iron, showing the best combination in chilled castings. Ills. 4500 w. Jour Am Soc of Mech Engrs—June, 1912. No. 33999 D.

Tests of Chillable Irons. Discussion of Thomas D. West's paper. 2500 w. Jour Am Soc of Mech Engr—Aug., 1912. No. 35357 D.

New Processes for Chilling and Hardening Cast Iron. Thomas D. West. Outlines a series of experiments to determine the effect of different methods of treatment. Ills. 7000 w. Jour Am Soc of Mech Engrs—June, 1912. No. 33993 D.

New Processes for Chilling and Hardening Cast Iron. Discussion of Thomas D. West's paper. 5000 w. Jour Am Soc of Mech Engrs—Aug., 1912. No. 35356 D.

Test Bars for Chillable Cast Irons. Thomas D. West. Read before the Int. Assn. for Testing Materials. Explains a new method for determining contraction, deflection and strength in the white and gray states of the same metal. Ills. 2000 w. Ir Age—Sept. 12, 1912. No. 35907 C.

Malleable Cast Iron. James Aston. Discusses the fundamental principles and methods of controlling the chemical composition, temperature and time. Ills. 3000 w. Wis Engr — May, 1912. No. 33647 C.

The Influence of Sulphur on Cast Iron. H. I. Coe. Read before the British Found. Assn. Briefly considers the reasons for the presence of sulphur in pig iron, its effect on the physical and mechanical properties, the elimination, etc. Ills. 4500 w. Mech Engr—Aug. 23, 1912. No. 35750 A.

The Growth of Cast Irons After Repeated Heatings. H. F. Rugan. Read before the Iron & Steel Inst. (Parts V and VI.) Parts I to IV have been dealt with at previous meetings. Report of investigations. 2500 w. Ir & Coal Trds Rev—Oct. 4, 1912. No. 36924 A.

The Influence of Casting on the Quality of Cast Iron Plates (Ueber den Einfluss des Giessens auf die Qualität von Flusseisenbrammen). C. Canaris. Discusses the appearance and results of shrinkage, cavities, blow-holes, scale, etc., on castings. Ills. Serial. 1st Part. 3000 w. Stahl u Eisen—July 18, 1912. No. 35502 D.

See also Castings, under *Machine Works and Foundries.*

Copper

The Influence of Impurities in "Tough-Pitch" Copper. Frederick Johnson. Read before the Inst. of Metals. Considers principally the influence of antimony. Ills. 4000 w. Mech Engr—Oct. 18, 1912. No. 37071 A.

Copper Specifications

The Disadvantages of the New American Standard Copper Specifications. Ernest A. Lewis. A criticism of the proposed standard specifications of the Am. Soc. for Test. Materials, giving reasons for urging its revision. 5000 w. Met & Chem Engng—Sept., 1912. No. 35730 C.

Corrosion

Summary of Corrosion Tests of Wrought Iron and Steel. Gives a summary of early and of later tests, with results. 1500 w. Boiler Maker—March, 1912. No. 31115.

Wrought Iron, Steel and Corrosion. William R. Fleming. A study in differences of chemical and physical properties and their relation to variations in service. Ills. 2500 w. Ir Age—March 14, 1912. No. 31164 C.

See also Steel, under *Materials of Construction;* Pipe Corrosion, under CIVIL ENGINEERING, *Water Supply,* and Corroison, under ELECTRICAL ENGINEERING, *Electro-Chemistry.*

Failure

Micrographic Examinations of Failures. J. S. Glen Primrose. Abstract of lecture before the Glasgow Univ. Engng Soc. Describes modern methods of metallographic examination. Ills. 2000 w. Engng—Dec. 1, 1911. No. 28785 A.

Fatigue

The Fatigue Failure of Metals. G. B. Upton and G. W. Lewis. A study of the general theory and laws of fatigue failure of metals, particularly steel. 3000 w. Am Mach—Oct. 17, 1912. Serial. 1st part. No. 36805.

Fire Bricks

The Formation of Dinas Fire Brick (Ueber die Konstitution der Dinassteine). Kurd Endell. A structural analysis of various of these formations. Ills. 3500 w. Stahl u Eisen—March 7, 1912. No. 31340 D.

Glass

The Manufacture of Large Glass Vessels (La fabrication des Grandes Pièces en Verre). A. Granger. Describes the process of blowing and the modern process of molding large glass vessels. Ills. Serial. 1st part. 3500 w. Tech Mod—Nov., 1911. No. 28864 D.

The Manufacture of Window Glass (La Fabrication du Verre a Vitres). A. Jamet. Description of the blowing and drawing processes of the Window Glass Co. Ills. 4000 w. Génie Civil—Nov. 25, 1911. No. 28864 D.

Green Finishes

Decorative Green Finishes. Seymour W. Rowsbar. Information concerning methods of producing an artificial green finish on metals. 2000 w. Foundry—Sept., 1912. No. 35706.

Hack-Saw Tests

Some Hack-Saw Tests. Reports tests made which show the remarkable cutting qualities. 800 w. Engng—Dec. 1, 1911. No. 28784 A.

Hammered Metals

Leaf-Metal Processes in Ancient and Modern Times (Die Herstellung des Blattmetalls in Altertum und Neuzeit). W. Theobald. A descriptive review of ancient and modern methods of producing hammered metals. This first article treating on methods employed among the early Egyptians, Japanese, Indian, Romans and Grecians. Ills. Serial. 1st part. 7500 w. Glaser's Annalen—March 1, 1912. No. 31346 D.

Ingot Iron

See same heading, under MINING AND METALLURGY, *Iron and Steel.*

Iron

Foundry Iron. M. L. Smith. Discusses the effect of the metalloids and the condition of the carbon; the value of analysis, mixing, working, coke, etc. 5500 w. Ap Sci—May, 1912. No. 33646 C.

Leather

The Science of Leather Manufacture. K. D. Marlatt. Deals principally with the manufacture of heavy leather for belts, power transmission, etc., according to the English method. 3000 w. Ap Sci—July, 1912. No. 35318 C.

Lubricants

The Effect of Added Fatty and Other Oils Upon the Carbonization of Mineral Lubricating Oils. C. E. Waters. Reports of investigations. 14 pages. Tech Papers of Bureau of Stand, No. 4—Aug. 24, 1911, No. 34496 N.

See also Lubricant Testing, under *Measurement,* and Lubricants, under *Power and Transmission.*

Malleable Iron

Commercial Tendencies in Malleable Practice. Richard Moldenke. Read before the Int. Cong. for Test. Mat. Discusses malleable practice in Europe and America. 1500 w. Ir Trd Rev—Sept. 5, 1912. No. 35769.

Metallography

A Metallographic Study of Failures in Metals Conducted at the U. S. Naval Engineering Experiment Station, Annapolis, Maryland. J. F. Daniels. Illustrated with photo-micrographs. 1500 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33828 H.

The Inner Structure of Metals. Sir J. Alfred Ewing. Abstract of the May lecture of the Institute of Metals. Reviews what the microscope has taught us concerning the structure of the simple metals. Ills. 4000 w. Engng—May 17, 1912. No. 33271 A.

Notes on the Metallography of the Ferrous Metals. Wirt Tassin. Notes given as a series of talks to foundry and mill chemists and to engineers of tests. Ills. 1300 w. Jour Am Soc of Nav Engrs —Aug., 1912. No. 36330 H.

Some Interesting Appearances in Steel Blocks During Rolling (Ueber interessante Erscheinungen in Stahlblocken während des Auswalzens). Karl Neu. Brief illustrated description of observed sections. Discussion. 2100 w. Stahl u Eisen—Aug. 15, 1912. No. 36111 D.

The Solidification of Metals from the Liquid State. G. T. Beilby. Read before the Inst. of Metals. An inquiry into the changes which occur in metals immediately before solidification. Ills. 1500 w. Engng—Sept. 27, 1912. No. 36730 A.

The Thermal-Magnetic Transformations of 25 Per Cent. Nickel Steel. E. Colver-Glauert and S. Hilpert. Read before the Iron & Steel Inst. An account of experimental work, with illustrations. 2000 w. Ir & Coal Trds Rev—Oct. 4, 1912. No. 36926 A.

The Solubility of Cementite in Hardenite. J. O. Arnold and Leslie Aitchison. Read before the Iron & Steel Inst. A statement of facts recorded by careful scientific micro-thermal examinations, showing that theory and practice do not disagree. 1000 w. Ir & Coal Trds Rev —Oct. 4, 1912. No. 36930 A.

Notes on the Solubility of Cementite in Hardenite. John Oliver Arnold and Leslie Aitchison. Read before the Iron & Steel Inst. Illustrated report of research work. 700 w. Ir & Coal Trds Rev—May 10, 1912. No. 33016 A.

The Gases Evolved on Heating Steel to Its Melting Point in a Vacuum. G. Wesley Austin. Read before the Iron & Steel Inst. Describes the apparatus and methods employed and gives a summary of results. Ills. 1000 w. Ir & Coal Trds Rev—Oct. 4, 1912. No. 36922 A.

The Influence of Oxygen on the Properties of Metals and Alloys. E. F. Law. Discusses the relations of metals and their oxides. Ills. 2500 w. Engng—Sept. 27, 1912. No. 36732 A.

Iron and Nitrogen. J. H. Andrews. Read before the Iron & Steel Inst. Describes experimental methods and states the conclusions reached from each combination. 4000 w. Ir & Coal Trds Rev—Oct. 4, 1912. No. 36923 A.

See also Annealing, under *Machine Works and Foundries;* Steel, under *Materials of Construction,* and Analysis, under MINING AND METALLURGY, *Iron and Steel.*

Nickel

Some Notes on the Production of Black-Nickel. Gives the formula for black-nickel solution and information concerning improvements made and difficulties overcome. 2000 w. Brass Wld—Aug., 1912. No. 35327.

Oxygen

Oxygen Gas in the Arts and Industries. August S. Neumark. Considers its use in medicine and surgery, in maturing of spirits, manufacture of glass, manufacture of water gas, etc. Ills. 6000 w. Sci Am Sup—Jan. 13, 1912. No. 29546.

Pig-Iron

Mystery versus Chemistry in Grading Pig Metal. Thomas D. West. Shows the delusion of grading by fracture. 1200 w. Am Found Assn—Sept. 26, 1912. No. 37143 N.

The Grading of Pig Iron. Thomas D. West. Read before the Am. Found. Assn. Gives examples from experience showing that chemistry is the buyer's best dependence. 1200 w. Ir Age—Sept. 26, 1912. No. 36284 C.

Nickel Pig-Iron (Nickel-Roheisen). H. Thaler. Chemical and micrographical studies of this material. Serial. 1st part. 1800 w. Giesserei-Zeitung—Feb. 1, 1912. No. 30576 D.

The Possibilities of Special Foundry Pig Iron. Herbert Pilkington. Read before the British Found. Assn. Discusses methods favored abroad for obtaining certain desirable qualities in cast iron. 2000 w. Castings—July, 1912. No. 34684.

Platinum Utensils

Platinum Laboratory Utensils. Preliminary report of a committee, to the Am. Chem. Soc., giving results of a study of alleged inferiority of platinum ware made in recent years as compared with that made many years ago. 3500 w. Met & Chem Engng—Dec., 1911. No. 28589 C.

Quartz Fiber

How to Make Quartz Fiber. C. C. Hutchins. Illustrates and describes the making of the strongest suspension known. 1000 w. Sci Am Sup—Aug. 17, 1912. No. 35216.

Rivets

Steel Rivets. D. J. Champion. Read before the Am. Boiler Mfrs. Assn. Practical suggestions for users. 2000 w. Ir Age—March 28, 1912. No. 31595 C.

See also Rivetting, under CIVIL ENGINEERING, *Construction*.

Rubber

Rubber, Natural and Synthetic. Prof. F. Willy Hinrichsen. Discusses the commercial possibilities of artificial rubber. 2000 w. Sci Am—July 20, 1912. No. 34653.

Synthetic Rubber. C. J. Beaver. Discusses recent advances made in the production of synthetic rubber and its commercial possibilities. 1500 w. Elect'n, Lond—July 12, 1912. No. 34707 A.

The Business Aspect of Synthetic Rubber. F. W. Hinrichsen. Discusses the prospects of the new discovery. 1500 w. Sci Am—Aug. 3, 1912. No. 35026.

Synthetic Rubbers. Reprint of British press views on the synthetic rubber situation. 4000 w. Met & Chem Engng—Sept., 1912. No. 35734 C.

The Problem of "Synthetic" Rubber (Das Problem des "synthetischen" Kautschuks). K. Dieterich. Discussion of this phenomenon. 1800 w. Zeit d Mitt Motorwagen Ver—Nov. 15, 1912. No. 29735 D.

Rubber. Dr. W. C. Gear. Considers crude rubber, vulcanization, raw materials, articles and methods of manufacture, specifications, etc., with discussion. Ills. 5000 w. Jour Cleveland Engng Soc—March, 1912. No. 31573 D.

Plantation Rubber a Factor in Industry. Reports rapid increase in production, improved methods of tapping, etc. Ills. 3500 w. Automobile—Aug. 29, 1912. No. 35635.

Stealing World's Greatest Industry. Illustrated account of the various steps required to place rubber on the market, and of the shipping of a boat-load of rubber seed from Brazil for introduction into Asiatic possessions of the British Empire. 3000 w. Automobile—Sept. 26, 1912. No. 36365.

Brazil Plans Big Increase in Rubber Yield. Reports a new law providing remission of duties to encourage industry, bonuses for planting and efforts to bring the crop to 60,000 tons yearly. Ills. 3500 w. Automobile—Sept. 12, 1912. No. 35932.

Artificial Rubber (Les Caoutchoucs Artificiels). Andre Dubosc. Reviews the production of uncultivated, plantation, and regenerated rubber, and gives a résumé of the studies along synthetic production. Serial. 1st part. 3500 w. Tech Mod—Oct. 1, 1912. No. 36677 D.

Scrap

The Utilization of Scrap Materials. C. W. Johnson. Illustrated description of a system that has given large savings. 2000 w. Am Mach—Dec. 28, 1911. No. 29165.

The Conservation of Material. Ernest Cordeal. Describes methods which resulted in a saving of about 30 per cent. 1600 w. Am Engr—March, 1912. No. 31057 C.

Spiral Springs

Investigations on Spiral Springs of Circular Cross-section (Untersuchungen an zylindrischen Schraubenfedern mit Kreisförmigen Querschnitt). L. Zacharias. A tabular description of results. 4000 w. Zeit des Ver Deutscher Ing—Oct. 28, 1911. No. 28445 D.

Steel

A Discussion of the Heat Treatment of Steel. James H. Herron. Considers annealing methods, temperature measurements, and quenching processes, case hardening methods and operations. 5000 w. Ir Trd Rev—Nov. 30, 1911. No. 28573.

Influence of Heat on Hardened Steel. Edward G. Herbert. Gives details of experiments to determine the effect of different temperatures on carbon and high-speed steels. 6000 w. Am Mach—July 11, 1912. No. 34343.

Steel and Its Treatment. R. R. Abbott. An illustrated study showing the great importance of heat-treating all kinds of steel. Also discussion. 6500 w. Jour Cleveland Engng Soc—Sept., 1912. No. 37118 D.

Heat Treatment of a Nickel Steel. W. Campbell and H. B. Allen. An account of research work. 2500 w. Sch of Mines Qr—Nov., 1911. No. 29104 D.

The Importance of Incandescence in Steel Casting (Die Bedeutung des Glühens von Stahlformguss). P. Oberhoffer. A study of the crystalline structure of steel when cast at various temperatures. Ills. 3000 w. Stahl u Eisen—May 30, 1912. No. 33542 D.

Experiments on the Reliability of Mild Steel. C. E. Stromeyer. An account of experiments given in the annual memorandum of the Manchester Steam Users' Assn. 5000 w. Mech Engr—Dec. 1, 1911. No. 28760 A.

The Influence of Carbon on the Corrosion of Steel. Reports concerning tests being made by a committee of the British Assn. for the Adv. of Science. 2500 w. Eng Rec—April 20, 1912. No. 32190.

Determination of Carbon in Steel. W. L. Morrison. Explains a rapid method based upon the direct combustion of the sample in an electric furnace, and the absorption of the CO_2 in a bulb resting on a scale pan. Ills. 1000 w. Eng & Min Jour—June 29, 1912. No. 34130.

The Determination of Chromium and Its Separation from Vanadium in Steels. J. R. Cain. Describes the method, giving notes and precautions. 1500 w. Tech Papers of Bureau of Stand, No. 6—Nov. 1, 1911. No. 34498 N.

Titanium and Low Carbon Basic Steel. G. B. Waterhouse. Gives results obtained with four basic open-hearth heats, to which varying amounts of ferrotitanium had been added. Ills. 900 w. Ir Age—Dec. 14, 1911. No. 28945.

Microscopic Analysis of Steel in Forgings. E. F. Lake. Illustrated discussion of the effects of various heat treatments and the necessity for microscopic examination. 3500 w. Horseless Age—April 3, 1912. No. 31790.

Segregation in Steel. Charles L. Huston. From a paper read before the Am. Boiler Mfrs.' Assn. Considers steel usually made for boiler plate, its characteristics, the causes of segregation, the essentials of good service, etc. 2500 w. Boiler Maker—April, 1912. No. 31857.

Defects in Steel Ingots and Steel Rails. J. B. Nau. Describes a mechanical method that aided in securing sound steel, and discusses defects and their remedies. 2500 w. Ir Age—Aug. 22, 1912. No. 35341 C.

Methods of Sampling Steel Billets. C. W. Danforth. Account of investigations made to ascertain what samples are calculated to give a conveniently obtained and reliable analysis. 1500 w. Ir Age —Aug. 15, 1912. No. 35211 C.

"Exothermic Steel." Walter O. Amsler. Information concerning this material and its making. Ills. 3000 w. Met & Chem Engng—Sept., 1912. No. 35732 C.

The Use of Vanadium in Steel Castings. Edwin F. Cone. An illustrated study giving results showing greater strength, higher elastic limit, and in low carbon steel, increased dynamic value. 2500 w. Ir Age—Sept. 19, 1912. No. 36020 C.

The Texture of Hardened Steel (Das Gefüge des gehärteten Stahls). H. Hanemann. Microscopic studies of several kinds of hardened steels. Ills. Serial. 1st part. 5600 w. Stahl u Eisen—Aug. 22, 1912. No. 36113 D.

Analysis Variations in Steel. E. F. Davis. Gives some chemical analyses of steel shipped on specification, and shows the importance of analysis when the steel is received. 1800 w. Am Mach—April 4, 1912. No. 31754.

The Structural Composition and Physical Properties of Steel. Albert Sauveur. Considers slowly cooled steel, chemical vs. structural composition, physical properties of the structural constituents, steel of maximum strength, and ductility of steel vs. its structural composition. 2000 w. Jour Fr Inst—May, 1912. No. 33202 D.

Manufacture and Treatment of Steel for Guns. L. Cubillo. Read before the Iron & Steel Inst. Considers the conditions of the steel required, its melting, and treatment. Ills. 9800 w. Ir & Coal Trds Rev—May 10, 1912. No. 33021 A.

Problems of the Factory Metallurgist. William D. Mainwaring. From a paper before the Soc. of Detroit Chemists. Deals with problems arising in works practice in connection with the metallurgy of steel, and the methods used in solving them. Ills. 3000 w. Ir Age—July 25, 1912. No. 34767 C.

Relation Between the Micro-Structure and the Crystallization of Steels (Relations entre la Microstructure et la Cristallisation de l'Acier). N. T. Belaiew. Discusses the microscopic changes in the structure of steel during crystallization. Ills. 7500 w. Rev de Metall—Sept., 1912. No. 36187 H.

Iron and Steel for Electrical Appliances. Gives an outline of the present conditions of the magnetic properties of iron and steel, and particulars of results already obtained. 1700 w. Mech Wld—Feb. 23, 1912. No. 31030 A.

The History of the Sheffield Steel Industry. J. O. Arnold. Abstracted from *Times Engng Sup.* 4000 w. Can Engr—Dec. 21, 1911. No. 28916.

Sound Variations in Steels in Functions of Their Temperature (Variations sonores des aciers en fonction de leur température). Felix Robin. Interesting experiments on the determination of the steel content from the vibrations emanating from heated bars. Diagrams. 57

pp. Rev de Metallurgie—June, 1912. No. 33591 H.

See also Metallography, under *Materials of Construction;* Steel, under CIVIL ENGINEERING, *Materials of Construction,* and Electrometallurgy, under MINING AND METALLURGY, *Mining.*

Steel Fractures

Note on the Investigation of Fractures. F. Rogers. Read before the Iron & Steel Inst. Explains a method of printing from a fractured piece of steel and its use. Ills. 1700 w. Ir & Coal Trds Rev—May 10, 1912. No. 33022 A.

Steel Specifications

Steel Specifications from the Commercial Point of View. H. B. Strange. Abstract of a lecture before the Jun. Inst. of Engrs. Discusses specifications for various classes of steel. 3500 w. Mech Engr—Dec. 22, 1911. No. 29463 A.

Society of Automobile Engineers Specifications for Steel. Reviews the more important parts of the specifications for the composition, heat treatment and properties of various kinds of steel. Supplement. 2500 w. Mach, N Y—June, 1912. No. 33351 C.

Structural and Boiler Steel Specifications. Gives a recent revision of the standards used by the American Steel Manufacturers. 3000 w. Ir Age—Aug. 22, 1912. No. 35344 C.

Strength

Effect of Temperature on Tensile Tests of Metals. Prof. A. K. Huntington. Read before the Inst. of Metals. Report of tests of the effect of temperatures higher than atmospheric on tensile tests of copper and its alloys, and a comparison with wrought iron and steel. 2500 w. Mech Engr—Oct. 11, 1912. No. 36935 A.

The Effects of Temperature on Tensile Tests of Metals. A. K. Huntington. Read before the Inst. of Metals. Results of tests on the effect of temperatures higher than atmospheric on tensile tests of copper and its alloys, and a comparison with wrought iron and steel. 1800 w. Engng—Sept. 27, 1912. No. 36731 A.

Tool Steels

The Hardening of Carbon and Low-Tungsten Tool Steels. Shipley N. Brayshaw. Gives a summary of exhaustive practical experiments. 4000 w. Engineering Magazine—Oct., 1912. Serial. 1st part. No. 36289 B.

Hardening of Carbon and Low Tungsten Tool Steels. Shipley N. Brayshaw. This second part of a serial gives data of bending tests and their interpretation. 4000 w. Engineering Magazine—Nov., 1912. No. 37114 B.

Structure and Heat Treatment of Tool Steel. J. V. Emmons. Read before the Metal Trds. Supts. & Foremen's Club, Cleveland, O. Considers results and methods of annealing, the distribution of cementite, etc. Ills. 3000 w. Ir Age—Feb. 22, 1912. No. 30704 C.

Structure and Heat Treatment of Tool Steel. J. V. Emmons. Read before the Metal Trds. Supts. & Foremen's Club of Cleveland. Considers elements present and their effects, methods of inspection, annealing, hardening, etc. Ills. 3500 w. Mech Engr—March 8, 1912. No. 31254 A.

The Influence of Heat on Hardened Tool Steels: With Special Reference to the Heat Generated in Cutting Operations. Edward G. Herbert. Read before the Iron & Steel Inst. Describes experiments and attempts to connect the observed changes in the cutting durability with changes in the physical properties as shown by breaking tests at various temperatures. 5000 w. Ir & Coal Trds Rev—May 10, 1912. No. 33015 A.

Tool Steel. W. B. Sullivan. Aims to present facts that make for a clearer understanding of the treatment of steel and more uniform results in the service of tools. Ills. Discussion. 16000 w. Pro N Y R R Club—Nov. 17, 1911. No. 29062.

A Study of the Proper Hardening and Classification of Tool Steels. W. B. Sullivan. A discussion of facts relating to the treatment of tool steel, and for securing more uniform results in the service of tools. Discussion. Ills. 7000 w. Pro of Ry Club of Pittsburgh—April 26, 1912. No. 33811 C.

Composition of High Speed Tool Steel. E. T. Edwards. Reports tests and gives records of performance of high speed steels. 3500 w. Ir Age—April 18, 1912. No. 32139 C.

Hints on the Working of Tool Steel. J. T. Towlson. Advice for inexperienced workers. 2500 w. Mech Wld—April 5, 1912. No. 31917 A.

High Speed Tool Steels. Irvin Haworth. Considers the effect of carbon on iron, the addition of rare metals, hardening and tempering. 2500 w. Prac Engr—July 11, 1912. No. 34613 A.

High Speed Tool Steels (Les Outils en acier rapide). P. Gorgeu. Methods employed in hardening and tempering. 3300 w. All Industrielle—Sept., 1912. No. 36205 D.

Turbine Building

Heavy German Tools for Turbine Building. C. A. Tupper. Concerning large tools used in heavy turbine work. Ills. 1800 w. Ir Age—Nov. 9, 1911. No. 27744.

White Metals

Experimental Tests of White Metals. Nino Pecorado. Read before the Int. Assn. for Testing Mat. Gives report of tests and results which are of service to machine designers. 2500 w. Am Mach—Sept. 26, 1912. No. 36220.

Wire Ropes

The Uses of Copper-Clad Iron Wire. Considers tests made on duplex wires at Chester, Pa., and the uses made of this wire. 2500 w. Elec Rev, Lond—June 7, 1912. No. 33768 A.

Wire Rope Splicing. F. L. Johnson. Illustrated directions. 500 w. Power—Jan. 30, 1912. No. 30109.

Calculations on the Strength of Wire Ropes (Note sur le Calcul du Travail du Metal dans les Cables Métalliques). Edgar Baticle. Mathematical discussion. 8000 w. Ann des Ponts et Chaussées—Jan.-Feb., 1912. No. 32076 E + F.

See Wire, under *Aeronautics*, and Wire Rope, under MINING AND METALLURGY, *Mining*.

Wrought Iron

Wrought Iron. Herbert Pilkington. Abstract of paper read before the W. of Scotland Ir. & St. Inst. A comparison of wrought iron and basic mill steel on such subjects as corrosion, mechanical structure, strength, durability, etc. 3500 w. Ir & Coal Trds Rev—March 22, 1912. No. 31736 A.

A Stronger Position for Wrought Iron. Abstract of a paper by Herbert Pilkington read before the W. of Scotland Ir. & St. Inst. An addition to the steel-wrought iron controversy. 2000 w. Ir Age—Aug. 8, 1912. No. 35079 C.

The Value of Good Wrought Iron. Charles H. Reid. Remarks on good puddled iron and the process of making it. 2000 w. Ry Mas Mech—June, 1912. No. 33745 C.

Characteristics of Wrought Iron. A. L. Haas. A review of kinds, uses, peculiarities, and methods of testing this material. 2500 w. Mach, N Y—Oct., 1912. No. 36459 C.

Zinc

An Investigation of the Strength of Rolled Zinc. Herbert F. Moore. Reports tests, at the Univ. of Illinois, describing methods and stating results and conclusions. Ills. 4500 w. Univ of Ill, Bul 52—Dec. 26, 1911. No. 30647 N.

MEASUREMENT

Anemometers

Measuring Low-Pressure Air. G. S. Weymouth. Describes a method used in connection with treatment plants. 1500 w. Min & Sci Pr—April 20, 1912. No. 32363.

See also Wind Velocity, under ELECTRICAL ENGINEERING, *Measurement*.

Brinell Test

See Steel Testing, under *Measurement*.

Bureau of Standards

The National Bureau of Standards. J. D. Mooney. An account of the work and explanation of how it may be of use in the manufacturing arts. Ills. 4000 w. Am Mach—Feb. 15, 1912. No. 30418.

Calculator

A New Horse-Power Calculator. U. T. Holmes. Illustrates and describes the apparatus. 1500 w. Jour Am Soc of Nav Engrs—Nov., 1911. No. 28934 H.

A New Calculating Machine. Illustrated description of the Schooling calculating machine intended to effect subtracting operations. 3000 w. Engr, Lond—June 14, 1912. No. 33947 A.

Calibration

A Graphical Illustration of Rolling and Gauging (Walzbetrieb und Kalibrierung in graphischer Darstellung). Bruno Weissenburg. A graphical manner of governing the rolls of a rolling mill. 3500 w. Ills. Stahl u Eisen—Oct. 12, 1911. No. 28404 D.

The Beginning, Progress and Development in the Calibration of Hollow and Solid Cylindrical Machine Parts (Entwicklung, Aufgaben und Fortschritte des praktischen messens der hohl- und vollzylindrischen maschinenteile). Friedrich Ruppert. Reviews the growth in instruments of precision, with examples of older and modern gages. Ills. 6000 w. Zeitschr des Ver deutscher Ing—Sept. 14, 1912. No. 36623 D.

Calorimeters

The Smith Recording Gas Calorimeter. Illustrated description of an instrument for continuously measuring and recording the heat value of gases. 1500 w. Power—Jan. 2, 1912. No. 29319.

Exhaust Gas Calorimeters for Internal Combustion Engines. John S. Nicholson, and Thomas B. Morley. Brief descriptions of three designs used, explaining their use in determining heat losses. Ills. 1200 w. Engng — May 31, 1912. No. 33670 A.

The Quality of Steam in Boilers. O. Z. Howard. How to make a calorimeter from pieces of pipe and standard fittings, and method of figuring the quality of the steam. 1200 w. Power—July 9, 1912. No. 34304.

Thermo-Electric Bomb Calorimeters (Bombe Calorimétrique Thermo-Electrique). Ch. Féry. Description of bomb and tabular results of tests made on them. Ills. 2000 w. Gén Civ—May 25, 1912. No. 34006 D.

The Féry Bomb Calorimeter. Robert S. Whipple. Read before the British Assn. Illustrated description of the instrument and its use. 1800 w. Engng —Sept. 20, 1912. No. 36498 A.

Charts

Closed Heaters, Surface Condensers. Edward T. Turner. Gives a chart for determining the amount of condensing surface required. 700 w. Power—May 7, 1912. No. 32642.

Charts for Horsepower Transmitted by Gearing and Belting. Charles E. Evans. Supplement. Gives charts and explains their use. 600 w. Mach, N Y—Aug., 1912. No. 34926 C.

A Production Chart for Turned Pieces. Frank Land. Gives logarithmic chart with explanation. 500 w. Am Mach—Aug. 1, 1912. No. 34995.

Compass

A Compass for Drawing Circular Arcs of Large Radii. George W. Burley. Illustrated description. 500 w. Mach, N Y —Jan., 1912. No. 29278 C.

Compression Tests

The Theory of Material Changes under Rolls and Hammers (Die Theorie der Materialwanderung beim Walzen und Schmieden). Adolf Falk. Discusses the compression of metals and the changes taking place under compression. Diagrams. Serial. 1st part. 3000 w. Stahl u Eisen—May 16, 1912. No. 33503 D.

Cylinders

The Strength of Thick Hollow Cylinders Under Internal Pressure. Gilbert Cook and Andrew Robertson. Gives results of tests carried out by the authors on cast iron and mild steel cylinders. Ills. 4000 w. Engng—Dec. 15, 1911. No. 29182 A.

Drafting

A Modern Drafting-Room System. Grandon G. Gates. Gives a brief description of method in use at Seneca Falls, N. Y., and also of the drafting-room and its equipment. 2000 w. Am Mach—May 9, 1912. No. 32666.

Dynametry

The Measurement of Dynamic Action and Its Application to the Maintenance of Railways (Mesure des Actions Dynamiques et son Application au Controlle Permanent des Voies Ferrées). M. L. Schlüssel. A study of dynametry, with notes on its use for detecting and locating irregularities in the roadway. Diagrams. 12800 w. Mem Soc Ing Civ de France—Feb, 1912. No. 32751 G.

Dynamometers

A Direct-Reading Torsional Dynamometer. Illustrates and describes a power meter possessing marked advantages. 1000 w. Sci Am Sup—Feb. 3, 1912. No. 30205.

The Dynamometer in Its Application to Railways (La Dynamomètre dans ses Applications aux Chemins de Fer). A. Huberti. A lecture on the principles and operation of dynamometers delivered before the Ecole Polytechnique. Diagrams. 7500 w. Alliance Industrielle—April, 1912. No. 32091 D.

See also same heading, under ELECTRICAL ENGINEERING, *Measurement*.

Elasticity

Phenomena Beyond the Elastic Limit. Charles P. Steinmetz. A lecture before the Stevens Engng. Soc. Explains the elastic limit as applied to the mechanical system and the electric system, and the application of forces below and beyond the limit. 4500 w. Stevens Ind—April, 1912. No. 35379 D.

The Physical Significance of the Elastic Limit—Standard Nomenclature Desirable in Discussion of Test Data. H. F. Moore. Read before the Assn. for Test. Met. Discusses the desirability of adopting a standard nomenclature, and the importance of uniformity in testing apparatus and methods. 4000 w. Engng & Con—Aug. 28, 1912. No. 35609.

The Theory of Elasticity (Teoria delle molle). V. Foschi. Mathematical discussion on elasticity derived by compression, bending, torsion, etc. Diagrams. Serial. 1st part. 10000 w. Ann della Soc d Ing e d Arch Ital—March 1, 1912. No. 32304 E.

Equivalents

Horsepower and Kilowatts. F. R. Low. Gives a table of equivalents at various efficiencies, with notes. 1000 w. Power —July 9, 1912. No. 34303.

See also Units of Energy, under *Measurement*.

Feed Water Meters

Measurement of Hot Feed Water. J. A. Knesche. Illustrates and describes various types of instruments, discussing the suitability of each. 4000 w. Power—Jan. 23, 1912. No. 29871.

The Measurement of Hot Feed Water. Illustrates and describes types of feed-water measuring devices. 1000 w. Prac Engr—Feb. 9, 1912. Serial. 1st part. No. 30664 A.

File Testing

A Round File Testing Machine. C. B. Hess. Illustrates and describes an interesting machine. 1200 w. Am Mach—Dec. 28, 1911. No. 29169.

Flue Gas Recorder

Fuel Economy and CO_2 Recorders. A. D. Williams. Considers three types of automatic CO_2 recorders, and reviews briefly the subject of fuel economy. 1800 w. Power—Jan. 23, 1912. No. 29872.

CO_2 and Boiler Efficiency. E. A. Uehling. Reply to article by R. S. Wilhelm on the "Value of CO_2 Recorder." 2000 w. Power—Dec. 5, 1911. No. 28626.

A Continuous Carbon Dioxide and Temperature Recorder and Its Application to Combustion Efficiency. Ed. A. Uehling. Read at joint meeting of N. Y. sections of three chemical societies. Reviews development of instruments and gives formulae for the heat wasted. 2500 w. Met & Chem Engng—Dec., 1911. No: 28591 C.

Fluid Pressure

Strength of Steel Tubes, Pipes, and Cylinders Under Internal Fluid Pressure. Reid T. Stewart. Gives a comparison of the theoretical formulae for the strength of steel tubes, pipes, and cylinders under internal fluid pressure. 4000 w. Jour Am Soc of Mech Engrs—April, 1912. No. 31774 D.

Strength of Steel Tubes, Pipes and Cylinders Under Internal Fluid Pressure. Discussion of Reid T. Stewart's paper on this subject. 1500 w. Jour Am Soc of Mech Engrs—Aug., 1912. No. 35354 D.

Force Relations

Static and Dynamic Force Relations in Machines. Walter Rautenstrauch. Explains method for determining the dynamic relations in machines. Diagrams. 2500 w. Sch of Mines Qr—July, 1912. No. 34621 D.

Fuel Testing

See same heading, under *Steam Engineering.*

Gages

The Value of a Table of Gauges. James Stormonth. Explains several uses to which they may be applied. 1500 w. Mech Wld—Nov. 10, 1911. No. 28125 A.

Manufacturing Plug Gages at Low Cost. J. P. Brophy. Gives the system of making the cost and methods of the Cleveland Automatic Machine Co. Ills. 2500 w. Am Mach—March 21, 1912. No. 31276.

Mounts and Uses for Dial Test Gages. Illustrates and describes various applications. 500 w. Am Mach—Nov. 23, 1911. No. 28228.

Gas Meters

The Measurement of Gases. Carl C. Thomas. Describes experiments with several forms of gas meters, showing how the results have been used in developing a new form of meter. Ills. 8500 w. Jour Fr Inst—Nov., 1911. No. 28276 D.

Flow of Gas Formulae, Derived, Analyzed, and Checked by Experimental Data, with Diagrams for Figuring the Flow of Gas in Street Mains and Services. J. M. Spitzglass. Read before the Illinois Gas Assn. Mathematical. 4500 w. Am Gas Lght Jour—April 22, 1912. Serial. 1st part. No. 32243.

Graphs

The Exact Determination of the Constants of Empirical Formulae. M. E. J. Gheury. Illustrates by example the working and application of a simple method due to the French mathematician Cauchy, which enables one to obtain the correct expression of the graph sought for in an easy manner. 2500 w. Engr, Lond—Sept. 13, 1912. No. 36270 A.

Horse-Power

Horse-Power and Its Measurement. A. Marsden. Considers the origin and use of indicator diagrams. Ills. 3000 w. Autocar—Dec. 9, 1911. No. 29034 A.

Indicators

Test Indicators and Their Uses. George W. Burley. Explains uses to which they are applied, and illustrates and describes types. 2500 w. Mech Wld—Dec. 1, 1911. No. 28761 A.

A Universal Indicator. H. V. Purman. Diagrams and description of indicator designed by F. A. Turner. 800 w. Mach, N Y—Jan., 1912. No. 29279 C.

An Automatic Self-Contained Optical Load-Extension Indicator. W. E. Dalby. Shows an instrument, recently designed by the author, and a few load-extension diagrams of steel, copper, and iron obtained photographically. 1500 w. Mech Engr—April 12, 1912. No. 32264 A.

Optical Lead Extension Indicator. W. E. Dalby. Read before the Royal Soc. Illustrated description of the instrument, showing some of the diagrams obtained. 3000 w. Engng — June 7, 1912. No. 33790 A.

Impact Testing

Using Cinematography in Determining Impulse in Impact Testing (Anwendung der kinematographie zur Ermittlung der Stosskraft bei Schlagversuchen). Walter Höniger. Describes this method of testing, arrangement of apparatus, etc. Ills. 3600 w. Zeitschr des Ver deutscher Ing—Sept. 14, 1912. No. 36625 D.

Interferometer

A Displacement Interferometer Adapted for High Temperature Measurement, Adiabatic Transformations of a Gas, etc. C. Barus. Abridged from the report to the Carnegie Inst. of Wash. Illustrated description of the apparatus and its use. 3500 w. Am Jour of Sci—Feb., 1912. No. 30442 D.

Inertia

The Practical Measurement of Moment of Inertia. H. Leland Lowe. Explains an experimental method used by the writer. Mathematical. 2500 w. Horseless Age—Sept. 11, 1912. No. 35951.

Laboratories

The Function of the Laboratory in the Training of an Engineer, with a Short Account of Some New Laboratory Equipment. Prof. E. W. Marchant. Abstract of a paper read before a joint meeting of Liverpool Engng. Soc. and the Manchester Sec. of the Inst. of Elec. Engrs. 2500 w. Elect'n, Lond—Dec. 15, 1911. No. 29219 A.

A Late Mechanical Engineering Laboratory. Ellsworth Tonkin. Illustrates and describes arrangements and equipment at Ohio State University for testing materials and hydraulic, ventilating and steam and gas power plant apparatus. 1600 w. Ir Age—March 7, 1912. No. 31053 C.

The British Physical Laboratory. I. W. Chubb. Explains the purpose of the laboratory and describes the work. Ills. 6000 w. Am Mach—July 4, 1912. No. 34197.

The Hydraulic and Mechanical Laboratories of the University of Toronto, Toronto, Canada. Robert W. Angus. Deals with these laboratories and their work. Ills. 3000 w. Engng—Feb. 23, 1912. Serial. 1st part. No. 31033 A.

Historic and Descriptive Sketch of the Experimental Hydraulic Laboratory at Santhia (Cenni storici e descrittivi della Stazione Idrometrica sperimentale di Santhia). Carlo Mazzini. Review of the work at this station since its erection in 1868. Ills. 10000 w. Ann della Soc d Ing e d Arch Ital—Jan. 16, 1912. No. 31420 E.

The Bessemer Laboratory. Illustrated description of this memorial laboratory which forms a part of the Royal School of Mines. 1200 w. Engr, Lond—Feb. 2, 1912. No. 30409 A.

Machine Testing in the Technical High Schools of Berlin (Das Versuchfeld für Werkzeug-maschinen an der Technischen Hochschule zu Berlin). G. Schlesinger. Description of laboratories, machines, and some of the research work accomplished by the school students. Ills. 2400 w. Zeitschr d Ver deutscher Ing—June 1, 1912. No. 33578 D.

Spirally Heated Laboratory Furnace. A. Vernueil. Abridged translation. Illustrated description of a spirally heated laboratory gas furnace for experimenting with alloys, enamels, etc., up to temperatures of 1600° C. 1200 w. Eng & Min Jour—Sept. 21, 1912. No. 36067.

Foundry Laboratory Practice (Praxis im Giessereilaboratorium). Theo. Grzeschik. Presents views on sampling and analytic methods. Ills. Serial. 1st part. 1400 w. Giesserei-Zeit—March 15, 1912. No. 32000 D.

Levelling

Precise Levelling in Workshop Practice. G. H. Millar. Explains two methods found very useful in certain cases. Ills. 1200 w. Engng—March 1, 1912. No. 31145 A.

The Testing of Spirit Levels. Detailed description of methods of testing in current use. Ills. 2200 w. Mach, N Y—April, 1912. No. 31673 C.

Load-Gages

A Simple Load-Weighing Apparatus for Large Testing Machine. Illustrates and describes a new form of load-weighing mechanism developed in Europe. 1200 w. Eng News—May 16, 1912. No. 32915.

Lubricant Testing

The Outerbridge Method of Detecting Mineral Oils and Resin Oil in Other Oils. Extracts from Mr. Outerbridge's paper read before the Am. Soc. for Test Materials, with colored plate. 2500 w. Am Found Assn—Vol. XX., 1912. No. 31639 N.

Machine for Testing Lubricants. Illustrates and describes the Sternol patent oil-testing machine and its work. 2500 w. Engng—June 28, 1912. No. 34333 A.

Manograph

The Polar Manograph and Its Use. F. C. Mock. Describes the construction of the instrument and some of the things which may be learned by its use with regard to engine defects. 2000 w. Horseless Age—Dec. 27, 1911. No. 29251.

Manometers

See same heading under CIVIL ENGINEERING, *Measurement.*

Materials

The Strength of Materials. Presidential address of William Cawthorne Unwin before the Inst. of Civ. Engrs. Also editorial. Discusses strength of materials, theory of elasticity, testing for quality, etc. 12500 w. Engng—Nov. 10, 1911. No. 28132 A.

Scientific Experiments by the Austrian Imperial Railway (Ueber das technische Versuche bei der k. k. oesterreichischen Staatseisenbahnverwaltung). Gives results of tests on all supplies for railway use. Ills. Serial. 1st part. 5500 w. Oest Wochenschr f d Oeff Baudienst—Nov. 16, 1911. No. 28840 D.

Metal Testing

The Optical Properties of Metals. L. R. Ingersoll. Illustrated study from the standpoints of theory and experiment. 4500 w. Sci Am Sup—March 30, 1912. No. 31649.

Repeated Stress Testing of Metals. J. B. Kommers. Read before the Int. Assn. for Testing Mat. Gives a proposed quality factor and a suggested standard form of test for various materials. 2500 w. Am Mach—Sept. 19, 1912. No. 36015.

Classification of Construction Metals in the Shops of the French Society of Mechanical Construction (Classification et Emploi des Metaux dans les Ateliers de la Société Français de Construction Mécanique). J. Netter. Steels, etc., classified according to their testing strengths. Ills. Serial. 1st part. 2400 w. Technique Moderne—Feb. 1, 1912. No. 30611 D.

Observations on Dynamic Tensile Stresses (Betrachtungen über dynamische Zugbeanspruchung). Rudolph Plank. Experiments, observations and results on metals under tension. Ills. Serial. 1st part. 7800 w. Zeitschr des Ver deutscher Ing—Jan. 6, 1912. No. 30563 D.

Porous Metals (Les Métaux Poreux). H. I. Hannover. Tests on the determination of degree of porosity in various metals. Ills. 1500 w. Rev de Metal—Sept., 1912. No. 36186 H.

Experiments on the Decrease of Tension Produced by Rounding Out Sharp Corners (Versuche über die Spannungsverminderung durch die Ausrundung scharfer Ecken). E. Preuss. Tabulated results on angular forms. Introducing the Preuss precision caliper. Ills. 5000 w. Zeitschr des Ver deutscher Ing—Aug. 24, 1912. No. 36164 D.

Experiments on the Influence of the Width of Grooves in Shock Absorbing (Versuche über den Einfluss der Breite bei Kerbschlagproben). R. Baumann. A series of breaking tests on grooved metal bars. Ills. and plate. 2700 w. Zeitschr des Ver Deutscher Ing—Aug. 17, 1912. No. 36161 D.

Tension Tests on Rods Under Torsion (Zugversuche mit Stäben, die Eindrehung besitzen). R. Baumann. A series of tests with tabulated results. Plate. 2500 w. Zeitschr des Ver Deutscher Ing—Aug. 17, 1912. No. 36162 D.

Metric System

Metric or English Measurements? A discussion of the advantages of the metric system and the economic considerations that make its adoption a problem. Ills. 4000 w. Automobile—Aug. 22, 1912. Serial. 1st part. No. 35415.

Micrometers

Some Uses of the Micrometer. George W. Burley. Explains the value of this precision tool and describes uses to which it can be applied. Diagrams. 1800 w. Mech Wld—Feb. 23, 1912. Serial. 1st part. No. 31028 A.

Mileage Recorders

See Manufactories, under *Machine Works and Foundries.*

Molding-Sand Testing

See Molding Sand, under *Machine Works and Foundries.*

Oil Tests

A New Oil-Testing Machine. C. H. Benjamin. Illustrated description of the machine and the behavior of an oil under test. 800 w. Am Mach—May 30, 1912. No. 33315.

A Practical Application of Fluorescence in Testing Oils for Industrial Purposes. Alexander E. Outerbridge, Jr. Abstract of an address before the Metallurgical Sec. Considers its utilization in the practical detection of adulteration in vegetable oil. Discussion. 3000 w. Jour Fr Inst—Dec., 1911. No. 28792 D.

The Behavior of High-Boiling Mineral Oils on Heating in the Air. C. E. Waters. Report of tests of oils intended for use in gas engines. 3000 w. Bul Bureau of Stand—Oct., 1911. No. 29093 N.

Parabolic Curves

Graphical Determination of the Constants in Parabolic Curves (Graphische Bestimmung der Constanten parabolischer Curven). Robt. Edler. Mathematical discussion. 1500 w. Elektrotech Rundschau —Nov. 2, 1911. No. 28829 D.

Permeagraph

The Permeagraph. Nathan C. Johnson. Illustrated description of a graphical machine for the magnetic testing of iron and steel. 1500 w. Sci Am Sup—Aug. 17, 1912. No. 35218.

Pipe Friction

Formula and Constants for Friction Loss in Dredge Discharge Pipes. H. Berridge. Gives diagrams and calculations for determining constants in Unwin's exponential formula from observations on friction loss in discharge pipes of Mississippi dredges. 1000 w. Eng News—July 18, 1912. No. 34650.

Friction Formulas for Commercial Pipe. Ira N. Evans. Compares results of standard formulæ in curves and tables, with notes. 2500 w. Power—July 9, 1912. No. 34305.

Pitometer

Saving $2,000,000 Water Waste a Year. Herbert T. Wade. Illustrated description of the pitometer with an account of the results accomplished by its use. 1200 w. Sci Am—April 6, 1912. No. 31769.

Some Experiences with the Pitot Tube on High and Low Air Velocities. Frank H. Kneeland. Relates to the use of the Pitot tube for the measurement of flow of large volumes of air. Ills. 4000 w. Jour Am Soc of Mech Engrs—Nov., 1911. No. 28195 C.

Power Measurements

Power Requirements of Rolling Mills. Samuel S. Roberts. Illustrates and describes apparatus for ascertaining the relation between heavily imposed loads and limited speed variations together with economical operations. 4000 w. Ir Age—Jan. 4, 1912. (Special.) No. 29324 D.

See also Rolling Mills, under MINING ENGINEERING, *Iron and Steel.*

Pressure Gauges

Meters for Pressure and Velocity of Gas and Steam (Messgeräte für Druck und Geschwindigkeit von Gasen und Dämpfen). H. Contzen. Brief description of several types of self-recording pressure gauges. Ills. 1400 w. Stahl u Eisen—April 4, 1912. No. 32017 D.

Pyrometry

On the Computation of the Constant C_2 of Planck's Equation by an Extension of Paschen's Method of Equal Ordinates. Edgar Buckingham and J. H. Dellinger. Mathematical. 3500 w. Bul Bureau of Stand—Oct., 1911. No. 29095 N.

High Temperature Measurement. Gives a classification and description of pyrometers as now used, discussing the conditions to be satisfied, and the methods of using. Ills. 2000 w. Prac Engr—March 29, 1912. No. 31884 A.

Pyrometers and Boiler Efficiency. C. F. Busse. Shows that suitably placed pyrometers make it possible to regulate boiler operation to secure best economy. Ills. 1500 w. Power—May 21, 1912. No. 32960.

Modern Electric Methods of Measuring Temperature. J. Rautenkrantz (Abstract translation). Describes types of instruments used, including resistance thermometers, thermo-electric pyrometers, and instruments depending on optical effects. 2500 w. Elect'n, Lond—Dec. 8, 1911. No. 29038 A.

Some Recent Improvements in Pyrometers. R. S. Whipple. Describes improvements which the author believes will add to their value in industrial work. Ills. 2500 w. (Abstract.) Elect'n, Lond—Nov. 3, 1911. No. 28017 A.

Recent Advances in High Temperature Measurement. J. A. Harker. From *Sci. Prog.* Reviews recent progress and practical applications of pyrometers and thermometric scales. 6000 w. Sci Am Sup—Nov. 4, 1911. No. 27664.

Determination of Very High Temperatures. G. A. Shook. Compares the radiation laws of Plauck and Wein, and explains experimental methods, applying them to particular instruments. 2500 w. Met & Chem Engng—Aug., 1912. No. 34979 C.

Calibration of Radiation Pyrometers. G. A. Shook. An explanation of methods used, giving details of various types. 3000 w. Met & Chem Engng—July, 1912. No. 34174 C.

Practical Pyrometry in the Iron and Steel Industries. S. H. Stupakoff. Discusses instruments for measuring high temperatures and their use, and some of the important features. General discussion follows. Ills. 22000 w. Pro Engrs' Soc of W Penn—July, 1912. No. 35838 D.

High-Temperature Work. Editorial review of discussions before the Faraday Society. 3000 w. Engng—Feb. 9, 1912. No. 30672 A.

The Installation and Use of Pyrometers in Steel Mills. C. S. Gordon. Describes the equipment and methods of control at the Illinois Steel Co.'s works. 4000 w. Met & Chem Engng—June, 1912. No. 33412 C.

The Siemens Pyrometer for Superheated-Steam Locomotives. Illustrated description of this thermo-electric pyrometer. 400 w. Engng—Sept. 6, 1912. No. 35999 A.

Industrial Thermometry and Pyrometry (La Thermométrie et la Pyrométrie Industrielles). Eugene Grandmougin. The first part is devoted to liquid, recording, and electric resistance thermometers. Ills. Serial. 1st part. 3500 w. Genie Civil—Sept. 7, 1912. No. 36201 D.

See also Interferometers, under *Measurement;* Thermal Ohm, and Thermopile, under ELECTRICAL ENGINEERING, *Electro-Physics*, and Reichsanstalt, under INDUSTRIAL ECONOMY.

Rating

The Rating of Machinery. Discusses the present position in England, and the law on this subject. 3000 w. Engr, Lond—Feb. 23, 1912. No. 31047 A.

Recording Instruments

Mechanical Counter and Electrical Recorder for Use in Gas-Engine Experiments. John Eustice. Illustrated description of the device. 1000 w. Engng—Nov. 3, 1911. No. 28038 A.

Rivet Stresses

Stresses in Rivets of Standard Beam-Connection Angles. Jacob Friedland. Gives results brought out in recent investigations, with the method of arriving at them. 2200 w. Eng News—April 25, 1912. No. 32369.

Sand Tests

Molding Sand Tests. Report of investigations by the Am. Found Assn. of 92 Sands, including Mineral Characteristics, by D. Dole Condit; the Microscope as a Testing Medium, by H. C. Loudenbeck, and other information. 5 parts. 8000 w. Am Found Assn—Vol. XXI. No. 34377 N.

The Testing of Molding Sands. Alfred B. Searle. From a paper read before the British Found. Assn. Describes what has been, and can be done in this direction. Ills. 3500 w. Castings—Sept., 1912. No. 36012.

Slide Rule

A Sensitive Trigonometrical Slide Rule. An explanation of a new slide rule claiming to be specially adapted to survey work calculations. 1800 w. Engr, Lond—June 14, 1912. No. 33946 A.

Speedometer

Smith and Sons' New "Perfect" Speedometer. Illustrates and describes this instrument. 1000 w. Auto Jour—May 18, 1912. No. 33256 A.

Investigations on Rotary-Pendulum Speedometers (Untersuchung von Drehpendel-Geschwindigkeitsmessern). G. Breitung. Mathematical discussion on such an apparatus for the use of turbo-machines and other wheel-driven machinery. Ills. 1500 w. Zeit d Mitt Motorwagen Ver—April 30, 1912. No. 33561 D.

Steam Meters

Various Types of Steam Meters. G. F. Gebhardt. General classification of steam flow meters and illustrated description of the principal types. 3000 w. Power—Feb. 6, 1912. Serial. 1st part. No. 30268.

Various Types of Steam Meters. G. F. Gebhardt. Illustrated description of steam meters in which the steam is throttled and the pressure drop utilized to indicate the flow. 2200 w. Power—Feb. 13, 1912. No. 30385.

A New Steam Meter. Illustrated description of the Curnon steam meter and its operation. 1000 w. Engr, Lond—May 3, 1912. No. 32891 A.

Steel Testing

The Brinell Test for Automobile Steel. Denison K. Bullens. An investigation showing that hardness, as so determined, gives no dependable measure of strength or other properties. 2500 w. Ir Age—Jan. 4, 1912. (Special.) No. 29321 D.

Stress

An Experimental Lecture on "Colour: Its Production and Its Application to the Determination of Stress." James Muir. Discusses colour effects and their causes, and their application to the measurement of stress. 4000 w. Trans Inst of Engrs & Shipbldrs in Scotland—Feb. 13, 1912. No. 31654 N.

Stresses in an A-Frame for a Crane Runway. Harry Gwinner. An analysis of the primary stresses and a discussion of the stresses in the lattice bars. 1600 w. Mach, N Y—Sept., 1912. No. 35668 C.

The Determination of the Stresses in Springs and Other Bodies by Optical and Electrical Methods. E. G. Coker. Read before the British Assn. Explains some of the difficulties and the methods of experimental investigation. 2000 w. Engng—Sept. 20, 1912. No. 36496 A.

Tachometers

The Speed of Steam Turbines with Particular Attention to Eddy-Current Tachometers (Geschwindigkeitsmesser für Dampfturbinen unter besonderer Berücksichtigung der Wirbelstrom-Tachometer). Fritz Berg. Compares centrifugal and vibratory tachometers with the magnet-electric or eddy current tachometer. Ills. 3000 w. Die Turbine—Aug. 20, 1912. No. 36149 D.

Testing

The Influence of the Relative Width and Thickness on the Extension of Test-

Bars. W. Gordon and G. H. Gulliver. Abstract of a paper before the Roy. Soc. of Edinburgh. 500 w. Engng—Jan. 26, 1912. No. 30323 A.

Test of an External Joint Film Oil Heater at the Engineering Experiment Station, Annapolis, Maryland. Describes the test, explaining its object, and giving results of the test determinations. Ills. 3000 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33827 H.

See also Testing, under *Materials of Construction.*

Testing Laboratory

A Model Testing Laboratory (Eine Musterstätte des praktischen Materialprüfungswesens). Fried. Krupp. A chemical laboratory and some physico-chemical experiments in the testing of materials. Ills. 2800 w. Stahl u Eisen—Oct. 5, 1911. No. 28403 D.

Testing Machines

Combination Forming and Testing Machine. F. B. Hays. Brief illustrated description of the machine and its operation. 500 w. Mach, N Y—July, 1912. No. 34160 C.

A New Machine for Alternating Load Tests. B. P. Haigh. Illustrates and describes a machine for testing materials under repeated stress. 2500 w. Elect'n, Lond—Oct. 4, 1912. No. 36833 A.

A 3300-Ton Testing Machine. Longitudinal section, plan, and cross-section of the new German machine at the Prussian Testing Institution. 800 w. Eng News—May 2, 1912. No. 32568.

Testing Machine of 3000-Ton Power for Iron Construction Parts (Prüfungsmaschine von 3000 t. Druckkraft für Eisenkonstruktionsteile). Details of large testing machine at Gross-Lichterfeld. Ills. 1700 w. Stahl u Eisen—March 7, 1912. No. 31341 D.

Modern Testing Machines. C. A. M. Smith. The present article deals with apparatus for tension, compression, and bending tests. Ills. 2500 w. Cassier's Mag—Feb., 1912. Serial. 1st part. No. 30287 B.

Testing Materials

Presidential Address to the Sixth Congress of the International Association for Testing Materials. Henry M. Howe. Slightly condensed address given in New York City, Aug. 3, 1912. 3000 w. Eng News—Sept. 5, 1912. No. 35841.

Presidential Address to Testing Engineers. Henry M. Howe. Outlines a plan for future work. 4500 w. Ir Age—Sept. 5, 1912. No. 35771 C.

Investigators of Materials of Construction. An account of the beginnings, personalities and aims of the International Association for Testing Materials. Ills. 3000 w. Ir Age—Sept. 5, 1912. No. 35770 C.

Resistance of Materials Against Pressure Universally Applied (Festigkeitversuche unter allseitigem Druck). Th. v. Kármán. Giving results of tests made on numerous materials and description of method employed. Ills. 9500 w. Zeit des Ver Deutscher Ing—Oct. 21, 1911. No. 28443 D.

The Tensile Strength of Metals Deformed by Cold (Tensions dans les Mé- Bauer. A study of the tensile strength of taux Déformés à Froid). Heyn and beams subjected to intense cold. Ills. 9500 w. Rev de Metall—Oct., 1911. No. 28417 E + F.

Tension in I-Beams and Channels (Spanning in I-Trägern und U-Eisen). F. Märtens. A tabulated report of experiments made. 3400 w. Zeit des Ver Deutscher Ing—Oct. 28, 1911. No. 28446 D.

See also Materials, under CIVIL ENGINEERING, *Roads and Pavements.*

Testing Metals

Studies on Recent Methods for the Mechanical Testing of Metals (Étude sur les nouvelles méthodes d'éssais mécaniques des métaux). R. Guillery. Reviews impact, torsion, tension and other tests; methods and machines for making them. Ills. 29 pp. Rev de Metallurgie—June, 1912. No. 33592 H.

Recent Methods for Mechanical Tests of Metals (Étude sur les nouvelles méthodes d'essais Mécaniques des métaux). M. R. Guillery. General review of recent methods, and more particularly the Brinell tests. Ills. and plates. 8800 w. Mem Soc Ing Civ de France—March, 1912. No. 34564 G.

Testing Methods

See Elastic Limit, under *Measurement.*

Thermodynamics

Thermodynamics of Concentration Cells. Henry S. Carhart. Describes investigations. 3000 w. Bul Bureau of Stand—Oct., 1911. No. 29098 N.

Thermometry

Thermometers for the Steam Plant. J. C. Peebles. Illustrates and describes some special thermometers and their receptacles for water and steam lines, condenser, economizer and flue gas temperatures. 1500 w. Power—Oct. 29, 1912. No. 37078.

Some Common Thermometer Errors. J. C. Peebles. Indicates where errors are likely to occur and how to avoid or correct them. 1400 w. Power—Oct. 1, 1912. No. 36426.

Low Temperatures and Their Industrial Uses (Ueber tiefe Temperaturen und ihre industrielle Verwertung). F. Pollitzer. Discussion on the possibilities in the use of low temperatures with decreased pressures. Diagrams. 5400 w. Zeitschr des Ver deutscher Ing—Sept. 21, 1912. No. 36629 D.

See also Iceberg Detection, under MARINE AND NAVAL ENGINEERING.

Time Recorders

The Periodograph Recording System. W. L. Miller. Illustrated description of a recorder and of a system for keeping record of time taken by workmen on various operations. 1500 w. Am Mach —Feb. 15, 1912. No. 30422.

Torsion

A General Formula for the Torsional Deflection of Shafts. S. E. Slocum. Derives a general formula for torsional deflection. 800 w. Jour Fr Inst — July, 1912. No. 34628 D.

Johnson's Direct-Reading Torsion-Meter. Illustrated description of an instrument that has proved most successful in the ships in which it has been fitted. 1500 w. Engng—Nov. 3, 1911. No. 28037 A.

The Gary-Cummings Torsionmeter. Illustrated description of the instrument as supplied to the U. S. S. "Florida." 1800 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33834 H.

A Universal Torsion Meter. Illustrated description of the new Denny-Edgecombe electro-mechanical meter, applicable to measurement of torsion on shafting which may be driven by any kind of a power engine. 2000 w. Engr, Lond—July 26, 1912. No. 35175 A.

Tests on Square Rods Under Torsion, and Researches on the Lineal Expansion and Sectional Contraction on Rods Under Tension (Versuche über der Verdrehung von Stäben mit rechteckigem Querschnitt und zur Ermittelung der Längs- und Querdehnung auf Zug beanspruchter Stäbe). O. Bretschneider. Mathematical discussion. Ills. 7200 w. Zeitschr des Ver deutscher Ing—Feb. 17, 1912. No. 31361 D.

Units of Energy

Simplifying Some Engineering Calculations. Carl Hering. Refers to the general principle urged in earlier papers, and considers the application of this simplified system to water and steam power calculations. 3000 w. Eng News—July 11, 1912. No. 34403.

Vacuum Pans

Calculations of Vacuum Pans. B. Viola. Describes how to calculate the heating surface for the evaporation of given quantities of liquors. 4500 w. Met & Chem Engng—Jan., 1912. No. 29310 C.

Water Flow

The V-Notch Weir Method of Measurement. D. Robert Yarnall. Explains this method and describes the Lea recorder which can be used for recording rates of flow. Ills. 2500 w. Jour Am Soc of Mech Engrs—Oct., 1912. No. 37100 D.

Weights

An Automatic Continuous Recorder of the Weight of Material on Belt and Bucket Conveyors, Cable Railways, Etc. Illustrated description of the Merrick weightometer. 1500 w. Met & Chem Engng—Sept., 1912. No. 35733 C.

On the Extensive Use of the Avoirdupois Pound in the Ancient British Period. Wilfrid Airy. Supplementary to an earlier paper. 1200 w. Inst of Civ Engrs—No. 3947. No. 30492 N.

POWER AND TRANSMISSION

Air Compressors

Designing Compressors upon Thermodynamic Principles (Beitrag zur Berechnung der kompressoren auf thermodynamischer Grundlage). G. Zerkowitz. Diagrammatic mathematical discussion. Serial. 1st part. 2600 w Zeit f d Ges Turbinenwesen—Dec. 10, 1911. No. 29718 D.

The Design of Air Compressors. The present article considers modern types of air compressors and their action. Ills. 2200 w. Mech Wld—Jan. 19, 1912. Serial. 1st part. No. 30169 A.

Advance in Air Compression. Illustrated description of a new style of valve said to have advantages over those commonly used. 1200 w. Mines & Min—Jan., 1912. No. 29291 C.

Increasing the Efficiency of Air Compressors. S. R. Stone. Discusses the essentials to economy in air compression. Ills. 2500 w. Min & Engng Wld—May 18, 1912. No. 32953.

Volumetric Efficiency of Air Compressors. F. D. Holdsworth. Illustrates and describes an apparatus used in determining compressor efficiencies by volumetric methods. 1500 w. Eng & Min Jour—May 25, 1912. No. 33082.

Air Compressor Efficiencies. E. M. Ivens. Considers over all efficiency the most important guide to the user. 2500 w. Power—Oct. 15, 1912. No. 36803.

Air Compressor Efficiency. B. M. Woodhouse. Read before the Rugby Engng. Soc. A discussion of compressor design and efficiency, especially air-valve design, cooling the air during compression, and volumetric efficiency. Ills. 4000 w. Mech Engr—Jan. 26, 1912. No. 30808 A.

Air Compressor Explosion. William L. Affelder. Gives data furnished by a recording thermometer on the internal temperatures. 1200 w. Mines & Min—June, 1912. No. 33359 C.

Modern High-Power Compressors (Moderne Hochdruckkompressoren). Kl. Karger. A review of present practice in design to meet the various classes of work to be performed. Ills. Serial. 1st part. 2200 w. Zeit d Oest Ing u Arch Ver—June 28, 1912. No. 34547 D.

Regulation of Power Driven Air Compressors. Lucius I. Wightman. Explains several methods. 1200 w. Compressed Air—Aug., 1912. No. 35330.

Operation of Air Compressors. E. A. Rix. Considers the factors affecting the volumetric efficiency. 2200 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29556 C.

Large Synchronous Motors for Compressor Service. G. B. Rosenblatt. Considers the policy of centralizing air compressor stations in mining, the selection of electrical apparatus, and describes one of the largest stations employing such motors. Ills. 2500 w. Elec Jour—March, 1912. No. 31597.

Acceptance Tests on an Electrically Driven Piston Compressor (Abnahmversuche an einem elektrisch angetriebenen kolbenkompressor). Report of method of tests and results obtained on two air compressors. Ills. 2400 w. Glückauf—April 20, 1912. No. 32705 D.

Steam-Driven Compound Air-Compressor. Illustrated description of a design by the British Westinghouse Brake Co. 600 w. Engng—May 31, 1912. No. 33675 A.

Unloading Device for Air Compressor. Describes a motor-driven horizontal two-stage air compressor with a capacity of 4,000 cu. ft. of free air per minute, with a new unloading device which is under the direct control of the air governor. Ills. 400 w. Engr, Lond—May 24, 1912. No. 33466 A.

A Recent Swedish Compressor (Eine neuzeitliche schwedische Druckluftanlage). Hjalmar Eriksson. Description and details of the Angström compressor. Ills. 2400 w. Glückauf—Aug. 24, 1912. No. 36125 D.

See also Gas Compressors, and Turbo-Compressors, under *Power and Transmission.*

Air Pumps

Air Pump Test. Gives a table showing what various sized air pumps can be expected to do, with information related. 1500 w. Ry & Loc Engng—Dec., 1911. No. 28621 C.

Gas Friction and a New Principle for Air Pumps; The Molecular Pump. W. Gaede. Abbreviated translation from the *Verhandlungen* of the German Phys. Soc. Description of a very interesting new pump. Ills. 2500 w. Elect'n, Lond—Oct. 18, 1912. No. 37067 A.

Rotary Air Pumps and Rotary Condensers (Ueber rotierende Luftpumpen und rotierende Kondensatoren). Emil Gutmann. Describes the design and mechanical action of centrifugal machines. Diagrams. Serial. 1st part. 2600 w. Zeitschr d Oest Ing u Arch Ver—Sept. 6, 1912. No. 36635 D.

Auxiliary Plant

Some Considerations on the Choice of Auxiliary Plant for Power Stations. A. H. Finch. Considers points of importance in the design of an auxiliary system. Discussion. Ills. 10500 w. Trans N-E Coast Inst of Engrs & Shipbldrs—March, 1912. No. 31652 N.

Bearings

Making Babbitt and Babbitted Bearings. Jesse L. Jones. Illustrates and describes practice of the Westinghouse Elec. & Mfg. Co. 2800 w. Am Mach—April 18, 1912. No. 32117.

Belts

Care of Belts. C. J. Morrison. Information as to methods applying to Shops having between 1000 and 3000 belts. Ills. 3000 w. Ry Age Gaz—Nov. 3, 1911. No. 27690.

The Use and Care of Belting. First of a series of articles on the theories and formulae in regard to belting, aiming to establish rules for practice. 2000 w. Ind Engng—Oct., 1911. Serial. 1st part. No. 27607 C.

Driving Belts: Their Troubles and Treatment. Hints on the management and upkeep of belts. 2000 w. Mech Wld—Oct. 4, 1912. No. 36847 A.

Tensile Tests of Belts and Splices. A. H. Miller. Report of tests recently made at the Univ. of Wisconsin, to determine the strengths and stretching properties of four general kinds of belting, and of splices. Ills. 1800 w. Am Mach—Oct. 10, 1912. No. 36711.

Calculations on Driving Belts (Het berekenen van drijfriemen). J. C. Dijxhoorn. Discussion on the paper by C. O. Gerckens in *Zeitschr d Ver deutscher Ing.* Diagrams. 5000 w. De Ingenieur—May 18, 1912. No. 33584 D.

Experiments on Special Belting (Versuche mit Riemen besonderer Art). Herr Kammerer. Results of tests on articulated, leather, woven, and other belts. Ills. 6000 w. Zeitschr d Ver deutscher Ing—Feb. 10, 1912. No. 31356 D.

Pulleys for High Speed Belts. Karl W. Knorr. Shows that slippage with high belt speeds is due to the action of centrifugal force. 1700 w. Power—Nov. 7, 1911. No. 27738.

"Titan" Belts (Les Courroies "Titan"). Leon Masson. Examples of the application of the Magaldi reinforcement to leather belts. Ills. 7000 w. Bul Soc d'Encour—May, 1912. No. 32745 E + F.

Chain Driving

Some Notes on the Chain Driving of Cam-Shafts. D. H. Simpson. Explains the point of view held by Hans Renold, pointing out the impossibility of making a chain exactly to the specified length and urging the provision of means for chain adjustment. 1800 w. Auto Jour—Oct. 28, 1911. No. 27671 A.

Discussion on the Chain-Driving of Cam-Shafts. A. S. Hill. A paper taking an opposite view on some essential points set forth in the article by D. H. Simpson. 1700 w. Auto Jour—Nov. 4, 1911. No. 28011 A.

Charts

See same heading, under *Measurement.*

Clutch

Multiple Disc Clutch. Illustrated detailed description. 1000 w. Prac Engr—Nov. 17, 1911. No. 28351 A.

Composite Plants

Combination Power and Ice Plant. Paul C. Percy. Brief illustrated description of a doubly composite plant at Waycross, Ga., in which both steam and gas are motive powers and the products are ice and electricity. 1200 w. Power—March 26, 1912. No. 31512.

Compressed Air

Power from Compressed Air. H. Macintire. Discusses air transmission in pipe lines and developing power from an air system. 1500 w. Power—Nov. 7, 1911. No. 27740.

Power from Compressed Air. H. Macintire. Considers the developing of power from an air system; the economy and applications. 1200 w. Am Mach—Nov. 30, 1911. No. 28603.

The Physiology of Submarine Work. Leonard Hill. Address before the British Assn. Reviews the development in the use of compressed air for such work, the illness and its cause, methods of decompression, oxygen poisoning and recompression. 10000 w. Nature—Oct. 26, 1911. No. 27666 A.

Losses in Compressed Air Plants (Mengenverluste in Druckluftanlagen). K. Schultze. Practical and theoretical determinations of the quantities lost. Diagrams. 2700 w. Glükauf—July 6, 1912. No. 35508 D.

Compressed Air in the Machine Shop. Frank Richards. On some of the uses to which it may be applied. 1500 w. Am Mach—Nov. 9, 1911. No. 27775.

Explosion of Air Receiver Due to Oil. Frank Richards. Explains the cause of an explosion of a small air receiver in Brooklyn on June 24. 1200 w. Power—July 30, 1912. No. 34593.

Compressed Air in the Operation of Machine Tools (Application de l'air comprimé au fonctionnement des machines-outils). M. Lunet. Presents several conditions most suitable for the use of compressed air. Ills. 1500 w. Rev Industrielle—Jan. 6, 1912. No. 30627 D.

The Use of Compressed Air in Boiler Shops. Thomas Aldcorn. Read before the Am. Boiler Mfrs' Assn. Discusses the production and storage of compressed air, its application, pneumatic tools and appliances. 5000 w. Ir Age—April 4, 1912. No. 31766 C.

The Use of Compressed Air in a Boiler Plant. Illustrated description of the air equipment in works at Kewanee, Ill. 2200 w. Ir Trd Rev—Nov. 16, 1911. No. 28067.

Application of Compressed Air in Tunnels (Applications de l'air comprimé a la perforation des grands souterrains). H. Villetard. With particular reference to large European Ry. tunnels, discussing the amount of compression, choice of compressors, etc. Ills. Serial. 1st part. 3500 w. Tech Mod—Nov., 1911. No. 28867 D.

A Large Hydraulic Air Compressing Plant. Illustrated description of the plant at Cobalt, Ontario, operated on the Taylor system. 2000 w. Engr, Lond—Nov. 10, 1911. No. 28136 A.

The Cobalt Hydraulic Company. G. C. Bateman. Brief illustrated description of a Taylor compressing plant. 1000 w. Eng & Min Jour—Nov. 18, 1911. No. 28101.

See also Tunnels, under CIVIL ENGINEERING, *Construction*, Air Tools, under *Machine Works and Foundries*, and Compressed Air, under MINING AND METALLURGY, *Mining*.

Compressors

Centrifugal Compressors. Louis C. Loewenstein. The present number considers the principle and the factors influencing effective operation. Ills. 3500 w. Gen Elec Rev—March, 1912. Serial. 1st part. No. 30763 C.

See also Air Compressors, Gas Compressors, and Turbo-Compressors, under *Power and Transmission;* and Compressors, under ELECTRICAL ENGINEERING, *Power Applications*.

Conveyor Belts

Feeders for Belt Conveyors. Colby M. Avery. Illustrates and describes types of automatic feeders. 1500 w. Eng & Min Jour—June 8, 1912. No. 33614.

Cones

Comparison between Flat and Step Cones. H. A. Pearn. Gives reasons for using a cone designed so that the speed of the machine is either increased or decreased by altering the countershaft speed before altering the position of the cone belt. 700 w. Prac Engr—May 17, 1912. No. 33268 A.

Costs

A Comparison of Efficiencies and Costs of Steam, Water, Gas and Oil Power Generation. Extracts from a discussion by Seth A. Moulton in the Report of the Maine State Water Storage Commission. 15500 w. Engng & Con—Sept. 4, 1912. No. 35791.

Inquiries into the Costs of Power with Several, Separated, Independent Driving Mediums (Unkostenermittlung in Betrieben mit mehreren voneinander unabhängigen Betriebsabteilungen). C. M. Lewin. Tables and methods for determining such costs. Serial. 1st part. 2200 w. Zeit f Werkzeug—April 15, 1912. No. 32716 D.

Operation of Wisconsin's Capital Plant. Illustrates and describes the plant equipment, and gives information from the report for 1911 concerning operating and fixed costs. 2000 w. Power—Oct. 22, 1912. No. 36945.

The Relative Economy of Gas Engines and Other Sources of Power. J. B. Meriam. A discussion principally of gas and oil engines in plants of moderate size. Ills. 2200 w. Jour Cleveland Engng Soc—Dec., 1911. No. 29082 D.

Crank Drive

Change of Pressure and Thrust in Crank Driven Machines (Ueber Druckwechsel und Stösse bei Maschinen mit Kurbeltrieb). F. Döhne. Mathematical discussion. Ills. 4800 w. Zeitschr d Ver deutscher Ing—May 25, 1912. No. 33577 D.

Electric Drive

Comparisons of Group and Individual Drive in Machine Shops. A. G. Popcke. Describes a method of making a test in a large machine shop using a graphic recording meter. 2000 w. Elec Jour—Nov., 1911. No. 28320.

Selecting a Motor of Proper Hp. A. G. Popcke. Gives an analysis of method of determining a motor for individual drive on a machine tool. Ills. 3000 w. Am Mach—Sept. 26, 1912. No. 36217.

Connecting Motors and Machines. A. G. Popcke. Discusses the principal points to be considered in mechanically connecting a motor to a machine. Ills. 4000 w. Am Mach—Oct. 3, 1912. No. 36449.

The Proper Procedure in Factory Electrification. William B. Wreaks. Discusses adaptability, economy, and selection of motors. 1500 w. Elec Jour—June, 1912. No. 34043.

Motor-Drive in the Machine Shop. George H. Hall. Outlines the principles of motor application, and suggests methods by which belt-driven tools may be accommodated to motor drive. Ills. 5000 w. Mach, N Y — June, 1912. No. 33354 C.

Wiring and Motor Installation in a Large Machine Shop. Guy R. Grove. Illustrated description of a factory installation at Bradley, Ill. 2500 w. Elec Rev & W Elect'n—June 8, 1912. No. 33609.

Applications of Electric Motors. M. Shuttleworth. Read before the Newcastle Sec. of the I. E. E. Points out some of the main considerations to be borne in mind when applying motors to everyday use. Discussion. 8000 w. Elec Engr, Lond—Feb. 9, 1912. No. 30679 A.

The Electrical Driving of Rolling Mills. C. A. Ablett. Abstract of paper read before the Inst. of Elec. Engrs. Discusses the variations in power required and devices for regulating it, the Ilgner system, etc. Discussions. 5000 w. Elec Rev, Lond—Feb. 9, 1912. No. 30659 A.

The Electrification of the Shelton Mills. W. H. Lake. Read before the Staffordshire Iron & Steel Inst. States the considerations which led to the adoption of electric driving and illustrates and describes details of the plant. Short discussion. 6000 w. Ir & Coal Trds Rev—Dec. 22, 1911. No. 29477 A.

Electricity in Foundries. Comments on motors for cupola blowers, lifting magnets, and lighting; giving data of typical installations. Ills. 3000 w. Elec Rev & W Elect'n—June 8, 1912. No. 33608.

Electric Driving in a Keighley Mill. Illustrates and describes modern examples of electrical individual and group driving. 1000 w. Elec Rev, Lond—June 21, 1912. No. 34207 A.

Electricity in Textile Factories. J. F. Crowley. Discusses the advantages and reduced risks, better lighting, etc. 4500 w. Elect'n, Lond—Nov. 17, 1911. No. 28345 A.

Turbo-Generators in Textile Mills. R. J. Kaula. Considers their use in supplying electric power, their economy and some recent improvements, etc. Ills. 4000 w. Elect'n, Lond—Nov. 17, 1911. No. 28348 A.

Individual Drive for Looms. C. D. Taite. Illustrates and describes an electrical equipment where the individual drive is adopted on a large scale in a weaving shed. 1500 w. Elect'n, Lond—Nov. 17, 1911. No. 28344 A.

Electrically Driven Textile Mills in the Manchester Area of Supply. S. L. Pearce. An account of developments, illustrating and describing sub-stations at mills. 2500 w. Elect'n, Lond—Nov. 17, 1911. No. 28349 A.

Recent Developments of the "Schorah" Individual Drive System in English and Colonial Textile Mills. W. R. Rothenberg. Explains causes of difficulties in early installations, and illustrates and describes recent improvements and successful working. 2000 w. Elec Rev, Lond—Nov. 17, 1911. No. 28340 A.

Electric Driving of Woollen Mills. W. B. Woodhouse. Gives graphical records showing variation of speed for different methods of driving and the superiority of the electric drive. 2000 w. Elect'n, Lond—Nov. 17, 1911. No. 28347 A.

The Application of Electric Motors to Cotton Mill Machinery. G. H. Cooke. Gives an account of operations in the blowing room, card room, and spinning rooms, and considers the most important circumstances affecting the choice of drive. Ills. 9000 w. Elect'n, Lond—Nov. 17, 1911. No. 28343 A.

The Electrical Equipment of an Up-to-date Stitching Factory. F. Westlake Parkinson. Illustrated description of a modern factory in Ireland, showing the applications of electricity to work of this nature. 2200 w. Elect'n, Lond—Nov. 17, 1911. No. 28346 A.

Motor Drive in Sewing Machine Factory. Guy R. Grove. Illustrates and describes an up-to-date installation for a medium-size manufactory. 1500 w. Elec Rev & W Elect'n—March 9, 1912. No. 31109.

Motor-Drive for Biscuit Factories. V. L. Board. Describes an electrically operated biscuit factory in a large western city. Ills. 1800 w. Elec Jour—Nov., 1911. No. 28322.

Electricity in Paper Mills. Discusses characteristics of paper-making machines and motors best suited for each individual drive. Ills. 5000 w. Elec Rev & W Elect'n—Aug. 31, 1912. No. 35678.

Application of Electric Power in Woodworking Plants. H. O. Stewart. Discusses details of importance in such a plant. Ills. 5000 w. Elec Rev & W Elect'n—April 6, 1912. No. 31838.

Electric Power in the Manufacture of Wooden Boxes. An illustrated article showing that by conserving and selling refuse it can be made profitable to purchase central station energy. 3500 w. Elec Rev & W Elect'n—June 15, 1912. No. 33741.

A Motor-Driven Piano Factory. W. J. Kyle. Illustrates and describes the plant of the Schumann Piano Co., Rockford, Ill. 1800 w. Elec Jour — June, 1912. No. 34039.

Electric Power and Heating in Candy Manufacturing. Discusses the cost of steam and electric power, gives power requirements, and illustrates and describes typical electrical installations. 3500 w. Elec Rev & W Elect'n—March 9, 1912. No. 31108.

Electricity in the Portland Cement Industry. F. C. E. Burnett. Remarks on the remarkable growth of the cement industry, its features, and the use of electricity for motive power, discussing the equipment. Ills. 8000 w. Pro Am Inst of Elec Engrs—Sept., 1912. No. 36313 F.

See also Electric Drive, Rolling Mills, and Textile Mills, under ELECTRICAL ENGINEERING, *Power Applications;* Electric Power, under MINING AND METALLURGY, *Iron and Steel*, and Cement Mills, under MINING AND METALLURGY, *Minor Minerals*.

Electrical Machinery

Electrical Machinery Breakdowns and Their Lessons. Michael Longridge. Information from the annual report for 1910, showing where mechanical weaknesses are apparent, and how most of the failures occur. 3000 w. Mech Engr—Nov. 3, 1911. No. 28027 A.

Energy

Natural Sources of Energy. Gives reports received by the British Science Guild examining various sources of energy and means of economy. 8500 w. Col Guard—April 4, 1912. No. 31992 A.

Flexible Transmission

Curvilinear Transmission of Movements (Transmission a Distance de Mouvements Discontinus). Ch. Jacquin. Description of the Herzwark system of single or multiple transmission through flexible tubing. Ills. 3200 w. Génie Civil—Dec. 16, 1911. No. 29808 D.

Gas Compressors

Efficiency of Gas Compressors. P. F. Walker. Read before the Nat. Gas Assn. of America. Considers mainly volumetric and mechanical efficiency. Discussion. 6500 w. Pro Age—Sept. 16, 1912. No. 35960.

Gas Power

The Use of Gas for Heat and Power: the Testing of Gas. E. B. Rosa. Lecture at centenary celebration of gas as an illuminant, Franklin Inst., Philadelphia, Pa. 10000 w. Am Gas Lgt Jour—June 24, 1912. No. 33885.

The Use of Gas for Heat and Power; the Testing of Gas. Edward B. Rosa. Reviews the history of the development of this industry, discussing related matters. 8500 w. Jour Fr Inst—Aug., 1912. No. 35364 D.

The Commercial Value of the Illuminating Gas Engine. Edwin D. Dreyfus. Discusses opportunities for illuminating gas power. Ills. 2500 w. Cassier's Mag—Aug., 1912. No. 36295 B.

Operating on Coke-Oven-Gas vs. Steam Turbines. C. A. Tupper. Illustrated description of the gas power plant, Royal Prussian Mines, Heinitz, Germany, and the steam-turbine plant connected in parallel. 3000 w. Min & Engng Wld—Dec. 23, 1911. No. 29153.

High-Pressure Gas for Manufacturing Purposes. A. W. Onslow. Abstract of a paper before the Inst. of Gas Engrs. Discusses gas furnaces, the lighting and heating by high-pressure gas, etc. 2000 w. Ir & Coal Trds Rev—June 14, 1912. No. 33950 A.

Extensive Use of Coke-Oven Gas. C. A. Tupper. From *Coal Age*. Illustrates and describes applications of gas power in Germany and France. 2000 w. Power—May 21, 1912. No. 32962.

Gas-Power Direct from the Coal Pit. Paul F. Mottelay. Gives an interview with Sir William Ramsay in which he explains his belief that it will be possible to burn coal in mines, producing gas conveyed by pipes to engines on the surface. Ills. 1200 w. Sci Am—Sept. 21, 1912. No. 36035.

Blast Furnace Gas Engine Plant of 60,000 h. p. C. A. Tupper. Illustrated description of the equipment of the power development of the Gewerkshaft Deutscher Kaiser, at Bruckhausen, Germany. 3000 w. Ir Age—Aug. 29, 1912. No. 35608 C.

Gas Engine Power for Mining and Metal Industries. Stuart Rice. Information and illustrations of some of the best and most typical of the modern plants. 2500 w. Min & Engng Wld—Sept. 7, 1912. No. 35843.

See also Gas-Engine Power, under MINING AND METALLURGY, *Mining*.

Grinding Mill

The Jackson-Gardner Vertical Grinding Mill and Huller. Illustrated description. 500 w. Engng—Feb. 23, 1912. No. 31044 A.

Lubrication

A Theoretical and Experimental Study of Mediate Friction. Prof. N. Petroff. A mathematical study. 2000 w. Engr, Lond—March 8, 1912. Serial. 1st part. No. 31264 A.

Lubrication and Bearings. A. L. Brennan, Jr. Directions and suggestions. 2500 w. Rudder—Aug., 1912. No. 34986 C.

A New Lubricator. Illustrated detailed description of a new lubricator placed on the market by the Bosch Magneto Co., Ltd., London. 1200 w. Engr, Lond—Aug. 2, 1912. No. 35208 A.

See also same heading, under *Combustion Motors*.

Lubricants

Lubricants, Their Properties and Uses. Robert Jeffrey. From a paper read before the Prac. Refrig. Engrs. Assn. Considers various lubricants and their properties. 2000 w. Power—Feb. 6, 1912. No. 30270.

The Effect of Added Fatty and Other Oils Upon the Carbonization of Mineral Lubricating Oils. E. E. Waters. Gives results of determinations of the amount of carbonization of a straight mineral oil, and of the same oil with a known amount of other constituents. 2500 w. U S Bureau of Stand—Test Paper No. 4. No. 36040 N.

The Relation Between Temperature and Vicosity of Lubricants. R. L. Ellis. Discusses the Ellis-Elebash temperature-viscosity law. 2500 w. Met & Chem Engng —Sept., 1912. No. 35731 C.

Manly Drives

Variable-Speed Power Transmission. George H. Barrus and Charles M. Manly. Describes a variable-speed power-transmitting mechanism called the "Manly Drive," and a series of efficiency tests on the same with some results. Ills. 3500 w. Jour Am Soc of Mech Engrs—Dec., 1911. No. 28736 C.

Motor Truck

See Auxiliary Equipment, and Motor Trucks, under *Automobiles*.

Power Comparisons

The Choice of Motive Power. W. O. Horsnaill. Considers items bearing upon the cost of alternative means of developing power, with general rules for their correct estimation. 3500 w. Engr, Lond —Dec. 29, 1911. No. 29624 A.

The Comparative Values of Water-Power and Steam Power. A. C. Dunham. A comparison of costs between electricity generated by hydraulic and steam plants, with much valuable information. 2000 w. Elec Wld—Jan. 6, 1912. No. 29518.

A Comparison of Gas and Electric Power for Drawbridge Swinging. Also editorial. Gives results of tests made at the swing span at Black Rock, N. Y. 1200 w. Eng News—July 18, 1912. No. 34644.

Power and Industrial Work. G. A. Julius. Considers the forms of drive most common in factory practice and analyzes the advantages and disadvantages of various powers from an engineering and commercial standpoint. 3500 w. Aust Min Stand—June 6, 1912. No. 34482 B.

Power Machinery

Power Machinery of the Steel Industry. Robert L. Streeter. First of a series of articles reviewing steam, electric, and gas motors applied to the operation of American furnaces and mills. Ills. 3000 w. Engineering Magazine—Aug., 1912. No. 34753 B.

Power Machinery of the Steel Industry. Robert L. Streeter. Second article of a series considering blast-furnace hoists and blowing engines. Ills. 4000 w. Engineering Magazine—Sept., 1912. No. 35447 B.

Power Machinery of the American Steel Industry. Robert L. Streeter. This third article of a series considers rolling-mill engines and the work they perform. Ills. 4000 w. Engineering Magazine—Oct., 1912. No. 36287 B.

Power Machinery of the American Steel Industry. Robert L. Streeter. Pumps, air compressors, and auxiliary apparatus are discussed in this fourth article of a series. Ills. 4000 w. Engineering Magazine—Nov., 1912. No. 37113 B.

Power Plant Records

Power Plant Recording System. L. R. W. Allison. Gives forms and methods used for indexing material received, on hand and issued. 1000 w. Power—May 7, 1912. No. 32641.

Power Plants

The Lay-Out and Erection of Power-House Plant. E. Kilburn Scott. Abstract of a paper read before the Jun. Inst. of Engrs. Describes the plant and its arrangement in the present number. 4500 w. Mech Wld—Sept. 20, 1912. Serial. 1st part. No. 36489 A.

An Interesting Power System. C. A. Tupper. Brief description of an interesting combination of two steam-turbine plants, one using sawmill refuse for fuel, and the other using exhaust steam supplied by the first plant. Ills. 800 w. Power—March 19, 1912. No. 31234.

Novel Features of Mine Power System. C. A. Tupper. Describes the new power plant of the Ray Con. Copper Co. at Hayden, Ariz. It contains 4 horizontal 4-cylinder triple-expansion engines. Ills. 1500 w. Power—Nov. 14, 1911. No. 27994.

Old English Power Plants. John S. Leese. Illustrates and describes some old engines and boilers which have passed the century mark. 1000 w. Power—July 23, 1912. No. 34698.

Simple Methods for Increasing Efficiency in Small Power Plants. L. B. Webster. Brief description of a simple arrangement for making the engine governor more sensitive to variations in the load, the improved regulation giving greater efficiency and economy. 1000 w. Elec Wld—May 4, 1912. No. 32616.

Temporary Power Plant for Woolwich Footway Tunnel. Illustrated description of a gas-engine power plant installed to drive a new footway tunnel under the river Thames. 1400 w. Engr, Lond—Jan. 12, 1912. No. 29916 A.

Aeolian Company's New Power Plant. Warren O. Rogers. Illustrates and describes a remodeled high-speed engine plant at Garwood, N. J. 1200 w. Power —May 14, 1912. No. 32859.

A Modern Mine Power Plant. Guy C. Stoltz and Samuel Shapira. Layout, illustrations and description of a plant at Port Henry, N. Y. 2500 w. Power—Nov. 7, 1911. No. 27737.

Hillside Steam-Turbine Station at Crawfordsville, Ind. An illustrated description of the replacing of a 20-year-old reciprocating-engine-driven equipment by modern turbo-alternators. 2000 w. Elec Wld—Nov. 25, 1911. No. 28312.

Modern Turbine Plant at Indianapolis. Illustrated description of the Mill St. station, using superheated steam, water-borne step-bearings for vertical turbines, etc. 1500 w. Elec Wld—Nov. 11, 1911. No. 27988.

A New Pennsylvania Railroad Power Plant. Illustrated description of the ore-handling plant at Cleveland, O., the only one on the Lakes using steam turbines for power. 2200 w. Ir Age—Aug., 29, 1912. No. 35605 C.

Installation of Small Power Plants in Federal Office Buildings. D. F. Atkins and H. M. Price. Considers the general arrangement of apparatus and rules for determining the size and number of generating units. 2000 w. Elec Wld—Aug. 3, 1912. Serial. 1st part. No. 35065.

Power Plant for a Large Industrial Establishment. Charles F. Bowen. Illustrated description of a plant near Manchester, N. H., which will furnish power for the largest shoe producing plant in the world, and also for a number of other factories. 2000 w. Eng Rec—Sept. 7, 1912. No. 35810.

Power Plant of the Stanley Works, New Britain, Conn. Warren O. Rogers. An illustrated account of the development from a 6. h. p. engine to compound engines and a low-pressure turbine. 1200 w. Power—Oct. 1, 1912. No. 36424.

See also Central Stations, and Power Plants, under ELECTRICAL ENGINEERING, *Generating Stations.*

Power Plant Tests

Report of Tests of Central Power Plant, Fort Winfield Scott, California. Capt. J. C. Johnson. 3000 w. Jour U S Art—March-April, 1912. No. 32152 N.

Power Requirements

Power Consumed in Driving Looms. J. Gorton. Report of experiments carried out at the Manchester School of Technology. 1200 w. Mech Engr—Aug. 16, 1912. No. 35469 A.

Power Resources

Our Sources of Power: With Special Reference to Highland Water Power. Alex. Newlands. Abstract of a paper read before the Inverness Sci. Soc. & Field Club. Mainly a discussion of the water power possibilities of Great Britain. 2500 w. Ir & Coal Trds Rev—May 24, 1912. No. 33471 A.

Power Transmitters

The Feidt Machine for the Transforming Circular Motion into Rectilinear Motion (Mécanisme Feidt pour la transformation d'un mouvement circulaire en mouvement rectiligne alternatif). H. Eric. Describes this new machine of especial benefit in pump operation. Ills. and Plate. 2500 w. Rev Indust—Aug. 31, 1912. No. 36208 D.

Pulleys

Graphical Solution of Cone Pulleys. F. A. Halsey. Gives chart for finding the ratio of the geometrical progression, with explanation. 1500 w. Am Mach—Feb. 8, 1912. No. 30275.

Stepped Cone Diameters. R. J. Iliffe. Explains a method which only requires the use of a set of curves to find the correct diameters. 500 w. Engr, Lond—Nov. 3, 1911. No. 28044 A.

See also same heading, under *Machine Elements and Design*, and Foundry Practice, under *Machine Works and Foundries.*

Rope Brakes

Rope Brakes, Construction and Design. Julian C. Smallwood. Drawings and description of several arrangements, with directions for using them and for calculating the horsepower. 3500 w. Power—May 28, 1912. No. 33155.

Rope Drive

The Transmission of Power by Cotton Ropes. R. E. Hart. From a paper read before the Assn. of Engrs.-in-Charge. Remarks on the ideals of a rope-drive, the difficulties and their solution, etc. 1600 w. Mech Wld—April 12, 1912. Serial. 1st part. No. 32269 A.

The Transmission of Power by Cotton Ropes. R. E. Hart. From a paper before the Assn. of Engrs. in Charge. Discusses the difficulties of rope-driving and their solution. 3000 w. Mech Wld—April 12 and 19, 1912. Serial. Two parts. No. 32483 each A.

Transmitting Power by Ropes. Everard Brown. Brief description of the systems used, the calculation of power, etc. 1500 w. Power—March 12, 1912. No. 31121.

Safety Devices

See same heading, under *Machine Works and Foundries.*

Screw Jacks

Screw Jacks for Lifting. Walter Heap. Gives a suggested design, explaining its advantages. 1500 w. Am Mach—June 13, 1912. No. 33642.

See also Hydraulic Jacks, under *Hydraulic Machinery*.

Shaft Couplings

See Couplings, under *Machine Elements and Design*.

Tidal Power

The Possibilities of Power from the Tides. J. Royden Peirce. Gives results of tests at Mamaroneck and a discussion of methods used elsewhere. 2000 w. Eng Rec—Jan. 27, 1912. No. 30070.

Deriving Power from Flood and Ebb (Die Ausnutzung der Kraft von Flut und Ebbe). Adolf Springe. Describes a projected plant near Husum, in which power is generated from impounded flood tides. Ills. and maps. Serial. 1st part. 3000 w. Zeit f d ges Turbinenwesen—June 20, 1912. No. 34537 D.

Turbine Shafts

New Contrivances in Balancing Vertical Turbine Shafts (Die Entlastung des Spurzapfens vertikaler Turbinenwellen mit besonderer Berücksichtung der neueren Vorrichtungen dafür). H. Egli. Description of recent mathematical exactitude. Serial. 1st part. Ills. 2400 w. Zeit f d ges Turbinenwesen—Oct. 10, 1911. No. 28455 D.

Turbo-Blowers

Construction and Operation of Turbo-Blowers and Compressors. Franz zur Nedden. First of a series of articles discussing the mechanical evolution and operating economy of turbine machines for handling air or gases. Ills. 2500 w. Engineering Magazine—July, 1912. No. 33965 B.

Construction and Operation of Turbo-Blowers and Compressors. Franz zur Nedden. This second article of a series considers temperature effects and cooling devices. Ills. 1500 w. Engineering Magazine—Aug., 1912. No. 34754 B.

Construction and Operation of Turbo-Blowers and Compressors. Franz zur Nedden. This third article of a series discusses the design of impellers and balancers. Ills. 2500 w. Engineering Magazine—Sept., 1912. No. 35450 B.

Construction and Operation of Turbo-Blowers and Compressors. Franz zur Nedden. The practical operation of turbo-blower and compressor plants is considered in this fourth article of a series. Ills. 1800 w. Engineering Magazine—Oct., 1912. No. 36288 B.

Construction and Operation of Turbo-Blowers and Compressors. Franz zur Nedden. This fifth article of a series discusses the efficiency of turbo-blowers as compared with the piston type. Ills. 1500 w. Engineering Magazine. Nov., 1912. No. 37112 B.

Modern Blowers and Compressors. Presents the advantages of new turbo-blowers and turbo-compressors. Ills. 1200 w. Prac Engr—June 14, 1912. No. 33926 A.

Turbo Blowers and Turbo Compressors. Gives particulars of trials made at Frankenthal. Ills. 1800 w. Ir & Coal Trds Rev—May 31, 1912. No. 33681 A.

Turbo-Compressors

Pokorny and Wittekind Turbo-Compressors. Illustrates and describes several turbo-compressors of this firm, giving test particulars. 2000 w. Engng—Dec. 15, 1911. No. 29184 A.

Commercial Applications of the Turbine Turbo-Compressor. Discussion of Richard H. Rice's paper. 12000 w. Jour Am Soc of Mech Engrs—Feb., 1912. No. 30694 D.

Turbo-Compressors in Practical Service. Considers the efficiency of turbo-compressors, the question of motor drive and the use of exhaust steam. Ills. 2200 w. Ir Age—April 4, 1912. No. 31762 C.

Use of Turbo Compressors in the Mining Field. George E. Edwards. An account of recent installations in the United States. Ills. 3500 w. Min & Engng Wld—July 6, 1912. No. 34290.

Noteworthy Turbo-Compressor Installations (Bemerkenswerte Anlagen von Turbokompressoren). P. Ostertag. Describes some of the widely known blowers and compressors in connection with their operation at various plants. Ills. Serial. 1st part. 1200 w. Zeit f d ges Turbinenwesen—Sept. 20, 1912. No. 36643 D.

Water Power

A Commercial Water Power Problem. W. D. Ennis. Computes the flow, available horse-power, power value and lease value for a small water power development used in conjunction with a steam plant. 1700 w. Power—Nov. 14, 1911. No. 27993.

See also Hydro-Electric, under ELECTRICAL ENGINEERING, *Generating Stations*.

STEAM ENGINEERING

Accumulators

Steam Regenerative Accumulators. D. B. Morison. Reviews installations showing the economies effected by utilizing exhaust steam in turbines, explains the principle of the Rateau accumulator and its value in turbine plants. Ills. 8000 w. Trans Inst of Engrs & Shipbldrs in Scotland—March 19, 1912. No. 33812 N.

Steam Regenerative Accumulators. D. B. Morison. Abstract of paper read before the Inst. of Engrs. & Shipbldrs. in Scotland. Illustrates and describes in detail the Rateau-Morison accumulator and its applications in British mines. 5000 w. Ir & Coal Trds Rev—March 22, 1912. No. 31735 A.

Notes on Exhaust Steam Accumulators. Francis H. Davies. Describes several exhaust steam accumulators of English manufacture, and their performance. 1800 w. Power—April 23, 1912. No. 32245.

Alarm Signal

The Neco Low Water Alarm. Illustrates and describes a device for giving an audible signal when unsafe limits are reached. 1000 w. Ir Age—Aug. 22, 1912. No. 35343 C.

Boilers

Modern Boiler Problems. E. D. Meier. Reviews the various problems that have arisen in steam boiler practice and how they have been solved. 4000 w. Sib Jour of Engng—June, 1912. No. 34028 C.

Master Boiler Makers' Association. Report of the Pittsburgh Convention, with abstracts of papers. 10500 w. Am Engr—June, 1912. No. 33605 C.

A Needless Defect in the Modern Lancashire Boiler, Its Cause and Remedy. Sam. Boswell. Discusses the trouble with the front ends of high-pressure Lancashire boilers, which give trouble at the furnace mouths and gusset stay rivets in the form of leakage. Ills. 4500 w. Manchester Assn of Engrs—March 23, 1912. No. 31914 N.

On the Wider Adoption and Standardization of Water-Tube Boilers. E. M. Speakman. Read before the Inst. of Engrs. & Shipbldrs. in Scotland. Discusses reasons for and against their wider adoption, types, etc. Ills. 1800 w. Engr, Lond—March 1, 1912. Serial. 1st part. No. 31154 A.

Modern Steam Boiler Automatic Water Regulation. Illustrated description of feed-water regulators attached to boilers in a Philadelphia power house. 1500 w. Sci Am Sup—Dec. 2, 1911. No. 28518.

Improvements in Boiler and Furnace Construction (Neuerungen in Dampfkessel und Feuerungsbau). R. Klein. Discusses the latest types of water tube boilers. Ills. Serial. 1st part. 2000 w. Schweiz Bau—Nov. 4, 1911. No. 28818 B.

Application of Prof. Bone's Boiler. Illustrated description of a boiler constructed for the Skinningrove Iron Co. of Yorkshire. 1000 w. Power—Jan. 16, 1912. No. 29631.

Calculations for the Bracing of Flat Surfaces in Boilers. J. P. Morrison. Illustrates methods of bracing, describing practice and giving tables. 2500 w. Boiler Maker—Feb., 1912. No. 30342.

Water-Tube Boilers with Slow-Moving Automatic Grates (Chaudières aquatubulaires avec foyers automatiques à propulsion in férieure). Description of the Sulzer water-tube boiler, also of the automatic charger, and self-stoking grate employed in connection. Ills. and Plate. 3800 w. Genie Civil—Sept. 21, 1912. No. 36680 D.

Locomotive Boilers at Collieries. Explains some of the causes of explosions. Ills. 2500 w. Col Guard—April 12, 1912. No. 32270 A.

The Vulcan Flexible System of Staying for Lancashire Boilers. Illustrated description. 1500 w. Boiler Maker—March, 1912. No. 31114.

The Suckling Water-Tube Boiler. Illustrated description, with statement of advantages claimed. 1200 w. Engng—Feb. 2, 1912. No. 30403 A.

The Solignac-Grille Boiler. Sectional view and description of a water-tube boiler in which the steam in formation does not pass through the water. 1200 w. Power—June 18, 1912. No. 33759.

The New Niclausse Boiler Construction (Die neue Bauart des Niclausse-Kessels). F. Geiseler. Details of the recent changes in the design of this boiler. Ills. 2700 w. Zeitschr d Ver deutschr Ing—May 18, 1912. No. 33573 D.

Cast Iron Boilers for Low Pressures (Le caldaie in ghisa per vapore a bassa pressione). Mario Lombardi. Describes various types. Ills. 3300 w. Industria—Aug. 11, 1912. No. 36214 D.

See also Boilers, under MARINE AND NAVAL ENGINEERING, and Heat Transmission, under *Steam Engineering*.

Boiler Cleaning

Notes on Cleaning Babcock and Wilcox Boilers. John S. Leese. Suggestions for the cleaning of these water-tube boilers.

1400 w. Elec Rev, Lond—March 29, 1912. No. 31877 A.

Boiler Corrosion

An Investigation of Electrolysis in Boilers. W. R. C. Corson. An account of an investigation of a case of abnormal tube fitting, with a description of the remedy. 2500 w. Locomotive—Jan., 1912. No. 30496.

Boiler Design

Notes on the Design of Cylindrical Tanks and Boilers. F. A. Garrett. Briefly describes the principles which govern the design, and discusses the relative efficiencies of riveted joints. 1000 w. Boiler Maker—March, 1912. No. 31113.

Innovations in the Construction of Boilers and Stokers (Innovazioni nella costruzione della caldaie a vapore e dei caricatori di combustibile). R. Klein. Reviews modern practice in boiler design. Ills. Serial. 1st part. 2800 w. Industria—May 26, 1912. No. 34012 D.

The Importance of the Furnace in Boiler Design. Charles S. Linch. Brief discussion of the distance of crown sheet from grate bars. 1200 w. Boiler Maker—May, 1912. No. 32800.

Efficiency of Joints in Boiler Shells. H. L. Strong. Calculations showing how to figure the efficiencies of both lap and butt joints with single, double and quadruple riveting. 2000 w. Power—May 14, 1912. No. 32864.

See also same heading, under *Machine Elements and Design.*

Boiler Efficiency

Notes on Steam Boiler Efficiency. Edward A. Uehling. From a paper read before the Mas. Mech. Assn. of Am. Compares boilers under test conditions with those under working conditions. 2500 w. Power—May 28, 1912. No. 33157.

Limiting Efficiencies of Steam Plants. R. C. H. Heck. Considers the influence of feed-water temperature upon absolute efficiency and gives calculations showing the best efficiency attainable. 2200 w. Power—July 2, 1912. No. 34146.

Increasing Steam Boiler Efficiency. George H. Gibson. Explains details of an economical method of absorbing heat from the gases of combustion. Ills. 3000 w. Ir Age—Sept. 26, 1912. No. 36283 C.

Steam Boiler Efficiencies. William Kent. Critical analysis of results of investigations conducted by the U. S. Bureau of Mines. 4000 w. Ind Engng—Oct., 1912. No. 36599 C.

Altitude and Power Plant Economy. A. G. Christie. Boiler evaporator efficiency is said to be independent of altitude, but an increase in grate area or draft is necessary. 3800 w. Power—Oct. 8, 1912. No. 36703.

Boiler Explosions

Traction Engine Boiler Explosion at Crowley. A report of the Board of Trade inquiry at Winchester. Ills. 3500 w. Mech Engr—Feb. 2, 1912. No. 30397 A.

The Causes of Boiler Explosions. S. F. Jeter. Read before the Am. Boiler Mfrs. Assn. Considers faulty design and carelessness to be the chief causes of disaster. 2500 w. Power—March 26, 1912. No. 31514.

Boiler Failures

Investigations on the Broken Frontwall of a Ship's Boiler (Untersuchung der gerissenen Stirnwand eines Schiffskessels). E. Heyn and O. Bauer. Objects for which the investigations were made and details of findings, physical and chemical. Ills. 2400 w. Stahl u Eisen—July 18, 1912. No. 35501 D.

Boiler Flues

An Ideal Boiler Tube Department. L. R. Pomeroy. Illustrated outline of a flue department handling 450 tubes a day, at a labor cost not to exceed three cents per tube. 2000 w. Am Engr—July, 1912. No. 34263 C.

Boiler House

A Standard Boiler House. J. S. Jacka. Read before the Lake Superior Min. Inst. Illustrated description of the boiler house and coal-handling system of the Crystal Falls Iron Mining Co. 2000 w. Mines & Min—Nov., 1911. No. 27627 C.

The Boiler House Plant of the Royal Liver Buildings, Liverpool. Illustrated detailed description. 1200 w. Engr, Lond—July 19, 1912. No. 34902 A.

Boiler Inspection

Boiler Inspection Law, State of Ohio. H. A. Baumhart. Discusses the law that went into effect Jan. 1, 1912. 2000 w. Locomotive—April, 1912. No. 33185.

Boiler Inspection—Its Responsibility in Relation to Manufacturer, Owner and Boiler Inspector. J. T. Bradbury. 2000 w. Boiler Maker—Aug., 1912. No. 35011.

Boiler Management

Care and Management of Water Tube Boilers. C. K. Heasley. Detailed directions. 1000 w. Power—Oct. 8, 1912. No. 36702.

Some Remarks on the Economic Working of Steam Boilers, with Especial Reference to the Automatic Regulation of the Admission of Feed Water Thereto. C. W.

Jordan. Read before the S. Wales Inst. of Engrs. Describes an auto-electric feed water regulator, explaining the advantage of its use. 3500 w. Col Guard—Oct. 27, 1911. No. 27727 A.

The Boiler House and Engine Room. John E. Starr. Read before the East. Ice Assn. Calls attention to records that should be kept by engineers. 2500 w. Ice & Refrig—Dec., 1911. No. 28680 C.

Boiler Plants

Interesting Boiler-House Installation at a French Colliery. Illustrates and describes the boiler-house of the Mines de Dourges Co., Pas-de-Calais. 1500 w. Col Guard—Oct. 4, 1912. No. 36848 A.

Heat Utilization and Fuel Economy in Boiler Plants (Wärmeausnutzung und Kohlenersparnis bei Dampfkesselanlagen). Fr. Eisenbach. General discussion and examples. Serial. 1st part. 1800 w. Elektrotech Rundschau—Nov. 2, 1911. No. 28830 D.

Boiler Plates

Experiments on Overlapped Arched Boiler Plates (Versuche mit überlappt geschweisten Kesselblechen). Peter Zwiauer. Tabulated results of such experiments. 1800 w. Zeitschr d Ver deutscher Ing—June 1, 1912. No. 33581 D.

Twenty Cracked Boiler Plates (Zwanzig Kesselbleche mit Rissbildung). R. Baumann. Deductions drawn from examination of twenty specimens. Plates. 8400 w. Zeitschr des Ver deutscher Ing—July 13, 1912. No. 35537 D.

Boiler Rating

Heating Surface, Boiler Horsepower. F. L. Johnson. Gives tables and instructions for using them in computing the heating surface and rated horse-power. 1200 w. Power—July 2, 1912. No. 34148.

See also Engine Rating, under *Steam Engineering*.

Boiler Scale

Device for Preventing the Deposit of Scale and for Purifying the Water in Locomotive Boilers. V. Artciche. Illustrated description of the device, explaining the advantages claimed. 3900 w. Bul Int Ry Cong—June, 1912. No. 33995 G.

Boiler Settings

Boiler Settings. Edward Ingham. Considers the importance of the subject, the selection of a suitable site, and details of proper setting. 2000 w. Elec Rev, Lond—Aug. 16, 1912. No. 35459 A.

Boiler Specifications

Uniform Boiler Specifications. Recommendations by the committee of the Am. Boiler Mfrs. Assn. for changes in the Massachusetts boiler laws. 2500 w. Power—April 2, 1912. No. 31713.

Boiler Stacks

Dimensions of Boiler Chimneys for Crude Oil at Sea Level and at Various Altitudes, with Correcting Factors for Fuel Economizers. C. R. Weymouth. Gives the elementary principles for the determination of the dimensions of chimneys, with related data. 14700 w. Jour Am Soc of Mach Engrs—Oct., 1912. No. 37101 D.

See also Stacks, under CIVIL ENGINEERING, *Construction*.

Boiler Tests

Strain Measurements of Some Steam Boilers Under Hydrostatic Pressure. James E. Howard. Reports hydrostatic tests made to ascertain the condition of the metal of the shell and other parts of two horizontal tubular steam boilers, and to acquire information on constructive details by means of measured strains. Ills. 3500 w. Jour Am Soc of Mech Engrs—Nov., 1911. No. 28194 C.

Strain Measurements of Boilers. A report of two 72-inch boilers tested to destruction by subjecting them to hydraulic pressure. Ills. 1800 w. Power—Dec. 5, 1911. No. 28625.

Chart for Calculating Boiler Tests. F. O. Pahmeyer. Gives chart for calculating results and explains its use. 1000 w. Power—July 23, 1912. No. 34700.

Old Boilers. Reviews tests showing the character of the evidence upon which old age retirements are based. Ills. 6000 w. Locomotive—Oct., 1912. No. 36697.

Tests of Old Boilers. Alex. M. Gow. Gives records of tests to destruction under hydrostatic pressure, of three 30-year-old boilers. Ills. 2000 w. Eng News—Feb. 1, 1912. No. 30234.

Mistakes in Testing Steam Boilers. Albert A. Cary. First of three articles discussing what refined equipment for testing boilers and furnaces has shown. 2500 w. Ir Age—Oct. 10, 1912. Serial. 1st part. No. 36714 C.

A New Method of Testing Boilers. A. L. Haas. Diagram and description of compressed gas flask apparatus and its application to boiler testing. 2500 w. Boiler Maker—Sept., 1912. No. 35905.

Steam Boiler Testing. John O. Steger. A guide to students taking up for the first time the subject of boiler testing. 7000 w. Jour U S Art—May-June, 1912. No. 33982 D.

Tests of Large Boilers at the Detroit Edison Company. D. S. Jacobus. Describes tests made on two boilers, one fitted with Roney stokers and the other with Taylor stokers, giving results. Ills. 5000 w. Jour Am Soc of Mech Engrs—Nov., 1911. No. 28196 C.

Test of the World's Largest Boilers. Gives results of a series of tests on the Sterling boilers at the Delray station of the Detroit Edison Co. Ills. 1000 w. Power—Dec. 5, 1911. No. 28624.

Tests of a 1000-H. P. 24 Tubes High B. & W. Boiler. B. N. Bump. Describes tests made on an inclined header B. & W. boiler with superheater and mechanical stoker. Ills. 4000 w. Jour Am Soc of Mech Engrs—Oct., 1912. No. 37099 D.

Evaporation Tests on a Double Flue Boiler Equipped with the Wefer Gas-Fired Furnace (Verdampfungsversuch an einem mit Wefer-Gasfeuerungen ausgerüsteten Zweiflammrohrkessel). Herrn Bütow and Dobbelstein. Description of plant and results of tests. Ills. 1800 w. Glückauf—May 18, 1912. No. 33516 D.

Boiler Tubes

Making Charcoal Iron Boiler Tubes. George Thomas. Reviews the history of charcoal iron, its qualities, the method of production, and the process involved in the manufacture of boiler tubes. Ills. 1500 w. Power — June 11, 1912. No. 33629.

Manufacture of Seamless Steel Boiler Tubes. J. Jay Dunn. Read before the Am. Boiler Mfrs.' Assn. Describes the process now used and reviews earlier processes which have been superseded. 3500 w. Boiler Maker—May, 1912. No. 32698.

The Manufacture of Seamless Steel Boiler Tubes. J. O. Richardson. Reviews the history of the manufacture of seamless tubes, describing the methods now used. Ills. 4500 w. Jour Am Soc of Nav Engrs —Nov., 1911. No. 28929 H.

History of Charcoal Iron and the Manufacture of Charcoal Iron Boiler Tubes. George Thomas, 3d. Read before the Am. Boiler Mfrs.' Assn. 2500 w. Boiler Maker —May, 1912. No. 32699.

See also same heading, under RAILWAY ENGINEERING, *Motive Power and Equipment.*

Boiler Washing

Locomotive Boiler Washing. C. E. Lester. Discusses feed water troubles and wash-out regulations. Ills. 2000 w. Boiler Maker—May, 1912. No. 32696.

Boiler Water

The Navy Standard Boiler Water-Testing Outfit and Instructions for Use. Description, and method of using. 2500 w. Jour Am Soc of Nav Engrs—Aug., 1912. No. 36333 H.

Mechanical Water Softener. Illustrated description of an important adjunct for boiler plants, used in England. 1000 w. Sci Am Sup—March 16, 1912. No. 31170.

Boiler Compounds. Frank Lyon. Explains the plan used in testing these compounds and the principles involved. 5000 w. Jour Am Soc of Nav Engrs—Nov., 1911. No. 28935 H.

Water Treatment and Boiler Troubles. W. A. Pownall. Discusses causes and remedies for boiler troubles, the advantages and disadvantages of water treatment, and a method of treatment that will give good results. General discussion. 13000 w. Pro W Ry Club—April 16, 1912. No. 33190 C.

Locomotive Boiler Corrosion and Treated Water. J. R. Francis. An account of corrosion trouble on the Peoria and Eastern division of the Big Four R. R., the investigation and remedy. 3500 w. Ry & Engng Rev—May 4, 1912. No. 32603.

The "Luminator" Treatment of Water. Henry B. Lake. From *Jour. Soc. of Chem. Ind.* Gives results of experiments to discover the effect of passing water over aluminum, and states conclusions. Discussion. 2000 w. Chem Engr—May, 1912. No. 33138 C.

See also Feed Water, under *Steam Engineering.*

Cincinnati, O.

Cincinnati's Plum Street Station. Illustrates and describes the conversion of a reciprocating steam plant to modern turbine equipment. 2500 w. Elec Wld—Nov. 4, 1911. No. 27703.

Coal Economy

Economies in Coal for Steam Production. S. J. A. Mills. Discusses the purchase and efficient use of coal for steam boilers. 1500 w. Mech Wld—May 10, 1912. Serial. 1st part. No. 32984 A.

Coal Purchases

Government Coal Purchases Under Specifications, with Analyses for the Fiscal Year 1909-1910. George S. Pope. With a Chapter on the Fuel Inspection Laboratory of the Bureau of Mines, by Joseph D. Davis. 91 pages. U S Bureau of Mines—Bul 41. No. 34372 N.

Compression

Engine Compression. S. M. Udale. Discusses its calculation and its effect on thermal efficiency and engine output. 1000

w. Horseless Age—Nov. 1, 1911. Serial. 1st part. No. 27682.

Condensers

The Condensation of Steam. Theodore Rich. Illustrates and describes modern apparatus and methods for producing a vacuum. 6500 w. Cassier's Mag—Jan., 1912. No. 29880 B.

Initial Condensation in Steam Engine Cylinders. A. L. Mellanby. Paper introducing discussion of this subject. 5500 w. Trans Inst of Engrs & Shipbldrs in Scotland—Nov. 21, 1911. No. 29969 N.

Methods of Dealing with Losses in Steam Plant Due to Condensation. George Wilkinson and J. Rendell Wilkinson. Abstract of paper read before the Assn. of Engrs-in-Charge. Outlines methods of producing and using steam which offer advantages over the usual methods. Ills. 6000 w. Mech Engr—Jan. 12, 1912. No. 29900 A.

Recent Development in the Rotary Air Pump and Condenser. C. E. C. Shawfield. Describes pumps evolved by Maurice Leblanc and by E. S. G. Rees, stating their advantages and disadvantages. Ills. 3000 w. Elect'n, Lond—June 14, 1912. No. 33918 A.

Steam Condensing Equipments. A. G. Christie. Discusses the condensation problem and the present commercial forms of condensing equipment. Ills. 5500 w. Ap Sci—Dec., 1911. No. 29073 C.

Steam-Condensing Equipments. A. G. Christie. Read before the Univ. of Toronto Engng. Soc. Explains in detail the condensing problem and the requirements of a plant, illustrating and describing types of condensers. 6000 w. Mech Engr—May 10, 1912. No. 32981 A.

Kinetic Theory of Gases and Steam. W. H. Booth. Explains the action of steam in a condenser and in an engine cylinder. 1500 w. Power—May 14, 1912. No. 32861.

Properties of Air and Steam Mixtures in Relation to Condensing Plant. Thomas B. Morley. Tabulated data and diagram with explanation of method of calculating the data used, and showing its application. 2000 w. Engng—Jan. 19, 1912. No. 30173 A.

Condensers for the Power Plant. William F. Fischer. Gives a general classification, describing various types and their operations. 2500 w. Power—March 19, 1912. No. 31236.

Safe Operation of Jet Condensers. John S. Leese. Explanations and suggestions for safe operation. 1000 w. Prac Engr—July 4, 1912. Serial. 1st part. No. 34393 A.

Ejector Condensers. Samuel Bullock. Read before the E. of Scotland Branch of the Assn. of Min. Elec. Engrs. Considers types of condensers and describes the Körting multi-jet ejector condenser. Ills. 4500 w. Ir & Coal Trds Rev—April 26, 1912. No. 32854 A.

See also Heat Transmission, under *Steam Engineering*, and Air Pumps, under *Power and Transmission.*

Condenser Tubes

See Corrosion, under ELECTRICAL ENGINEERING, *Electro-Chemistry.*

Cooling Towers

The Thermal Efficiency of Cooling Towers. B. H. Caffey. Observations on testing the effective work of water cooling towers. Diagrams. 2500 w. Ice & Refrig—Sept., 1912. No. 35773 C.

The Care of Cooling Towers. Considers practical points requiring attention if a cooling tower system is to be maintained in proper condition. 3000 w. Elec Rev, Lond—Sept. 13, 1912. No. 36249 A.

Cooling Towers. H. Y. V. Jackson. Deals with the usual methods of cooling large quantities of water. Ills. 1200 w. Mech Wld—Oct. 11, 1912. Serial. 1st part. No. 36937 A.

Draft

Relative Economy of Various Types of Draft Equipment. T. F. J. Maguire. This first of three articles discusses stock installations for natural draft, considering economy of installation and operation. 2500 w. Engineering Magazine—March, 1912. No. 30835 B.

Relative Economy of Various Types of Draft Equipment. T. F. J. Maguire. Second of three articles, discusses induced mechanical draft from the standpoint of economy. Ills. 4000 w. Engineering Magazine—April, 1912. No. 31548 B.

Relative Economy of Various Types of Draft Equipment. T. F. J. Maguire. This third article of the series discusses forced mechanical draft. Ills. 3500 w. Engineering Magazine—May, 1912. No. 32342 B.

The Rational Draft of Steam Boilers (Sur le tirage rationnel des générateurs de vapeur). J. Izart. Comparison of results ranging from natural draft to forced draft. Serial. 1st part. 5600 w. Tech Mod—Nov., 1911. No. 28866 D.

Economizers

The Fuel Economizer. F. F. J. Maguire. Explains the advantages of the apparatus in operating costs and conditions. Ills. 4000 w. Engineering Magazine—June, 1912. No. 33131 B.

Engines

An Improved Internal-Combustion Engine. Describes a type provided with a piston having co-operating parts. Ills. 2000 w. Prac Engr—Oct. 27, 1911. No. 27725 A.

An Improved Uni-Directional Flow Steam Engine. Improvements more particularly designed for vertical engines, especially the construction and arrangement of the heating jacket and admission and exhaust valves. Ills. 1200 w. Prac Engr—Nov. 3, 1911. No. 28025 A.

Kerchove and Uni-Directional-Flow Engines (Kerchove- und Gleichstrom-Dampfmaschine). G. Doederlein. Description and comparisons of the two types of engines. Ills. Serial. 1st part. 4800 w. Zeit des Ver Deutscher Ing—Oct. 7, 1911. No. 28440 D.

Kerchove and Uniflow Steam Engines. Abstract translation of an article by Dr. Doederlein, in *Zeit. der Ver. deut. Ing.* Compares these two types. 2000 w. Power—April 16, 1912. No. 31974.

An Important Development of the Steam Engine. Warren H. Miller. Illustrated description of the German "locomobile," or superheated steam unit. 2500 w. Sci Am—March 9, 1912. No. 31074.

American Type of Uniflow Steam Engine. Illustrated description of the Nordberg uniflow engine. 1000 w. Power—June 11, 1912. No. 33630.

The Direct-Current Steam Engine. Raymond C. Prescott. Discusses the principles of the Stumpf Gleichström and similar engines. Ills. 1800 w. Prac Engr—Aug. 29, 1912. No. 35782 A.

High Vacuum, Reciprocating Engines. H. Fothergill. An argument favoring the use of high vacuum and showing how it may be employed with advantage. Ills. 2000 w. Power—Jan. 16, 1912. No. 29629.

Tests of a Triple-Expansion Steam Engine (Versuche an einer Dreifachexpansions-Dampfmaschine). H. Hanszel. Stating the nature of the tests and results obtained therefrom. Serial. 1st part. 5500 w. Zeitschr des Ver deutscher Ing—Jan. 13, 1912. No. 30566 D.

Compound Steam Engines. Peter S. Caldwell. Read before the Western Branch of the Scottish Fed. Inst. of Min. Students. A study of the modern compound steam engine, reviewing the development. Ills. 3500 w. Ir & Coal Trds Rev—Aug. 23, 1912. No. 35762 A.

Horizontal Compound Tandem Engine. An engine exhibited by Franco Tosi at the Turine Exhibition is described. Plate & Ills. 1000 w. Engng—Feb. 9, 1912. No. 30671 A.

Large Corliss Winding Engine for India. Illustrated detailed description. 1000 w. Engr, Lond—Oct. 27, 1911. No. 27976 A.

The Corliss Engine—A Lecture. F. R. Low. Tells of what Corliss improvements consisted and gives directions for setting the valves of his engine. 4500 w. Power—Sept. 10, 1912. No. 35855.

The New Allis-Chalmers Engine. Illustrates and describes the construction of a new Corliss engine, giving table of tests. 1000 w. Power—Sept. 17, 1912. No. 35976.

12000 I.H.P. Vertical Rolling Mill Engines. Illustrated description. 600 w. Engr, Lond—Sept. 6, 1912. No. 36008 A.

Knocks and Pounds in Steam Engines. John S. Leese. Deals especially with noises difficult to locate and those difficult to diagnose. 1000 w. Mech Wld—Jan. 26, 1912. Serial. 1st part. No. 30307 A.

The Development of the Steam Engine. Augus Sinclair. Brief review of developments up to about 1770. Ills. 2000 w. Ry & Loc Engng—March, 1912. No. 30949 C.

See also Marine Engines, under MARINE AND NAVAL ENGINEERING.

Engine Balancing

The Practical Side of the Balancing of Engines. Points out principles upon which the subject depends, avoiding mathematics and using the graphical treatment. 2500 w. Prac Engr—April 12, 1912. Serial. 1st part. No. 32259 A.

Engine Compression

Compression in Engine Cylinders. W. J. Attick. Shows that under certain conditions compression is valuable as a means of regulating the ratio of expansion and inducing quiet running. 3000 w. Power—July 30, 1912. No. 34591.

Engine Cutoff

Shorter Cutoff, Greater Load. F. R. Low. Explains the apparent paradox. 1500 w. Power—Aug. 6, 1912. No. 35068.

Engine Design

The Development of the Steam Engine Since 1900 (L'Évolution de la Machine a Vapeur depuis 1900). M. E. Hohn. Review of recent advances in steam engineering. Ills. 8500 w. (Supplement.) Tech Mod—May 15, 1912. No. 32770 D.

Cylinder Feet and Bolts for Engines. A. M. Daniels. Considers the several conditions of the forces and offers a method for the calculation of these parts. 1200 w. Am Mach—Aug. 29, 1912. No. 35493.

Engine Economy

Steam Engines for Driving Reversing Rolling Mills. John W. Hall. Read before the Iron & Steel Inst. Explains the duty demanded and discusses the best method and the best engine for the work. 4000 w. Ir & Coal Trds Rev—May 10, 1912. No. 33020 A.

The Paxman-Lentz Mill Engine. Illustrated description of an engine claiming the utmost economy in steam consumption. 1000 w. Mech Wld—May 3, 1912. No. 32880 A.

Heat Transmission Through Conducting Surfaces. Discusses the present tendency of reducing the heat conducting surface per h. p. in boilers. Ills. 1500 w. Met & Chem Engng — July, 1912. No. 34179 C.

Steam Boiler Efficiency and Most Economical Method for Absorbing Heat from Gases of Combustion. Explains the saving by using economizers. Ills. 1500 w. Ind Engng—July, 1912. No. 34769 C.

Experiences at a Thermo-Electric Plant in Utilizing Intermediate Steam (Esperienze su di un impianto termoelettrico con utilizzazione del vapore intermedio). G. Ghersina. Describes design of plant and its operation, with results. Ills. Serial. 1st part. 1400 w. Industria—April 14, 1912. No. 32798 D.

Investigation of the Economy of a Simple Engine Operating with Steam Less Than That of Atmospheric Pressure. R. C. Carpenter. Gives results of an investigation tending to indicate that the reciprocating piston engine of small clearances can be operated with remarkable economy. Ills. 3000 w. Sib Jour of Engng—April, 1912. No. 32408 C.

Engine Failures

Engine Failures. Nels Osgaard. Extracts from a paper before the Northern Ry Club. Considers causes. 1500 w. Ry & Engng Rev—Jan. 6, 1912. No. 29501.

Engine Foundatios

See Foundation, under CIVIL ENGINEERING, *Construction.*

Engine Governors

Shaft Governors. Hubert E. Collins and Edwin F. Williams. Drawings and descriptions of several shaft governors and the manner in which they control the valve movements. 2500 w. Power—Aug. 27, 1912. No. 35440.

An Improved Spring Governor. Illustrated description of the Hartung spring governor. 800 w. Engr, Lond—Sept. 6, 1912. No. 36007 A.

Engine Rating

Nominal Horse-Power of Engines. James Shirra. Read before the Engng. Assn. of N. S. W. A discussion of the origin, meaning and value of the term. 2500 w. Aust Min Stand—May 30, 1912. Serial. 1st part. No. 34192 B.

Engine Testing

A New Analysis of the Cylinder Performance of Reciprocating Engines. J. Paul Clayton. Describes investigations resulting from extensive study of indicator diagrams. Part I. gives the approximation of actual steam consumption from indicator diagrams; and Part II. applies the logarithmic diagram to all elastic media. Ills. 104 pages. Univ. of Ill., Bul 58—May 6, 1912. No. 33980 N.

Testing an Engine Under Difficulties. H. B. Lange. Brief description of methods followed to make sure only the correct quantity of water should be charged to an engine being tested for steam consumption. 2400 w. Power—July 2, 1912. No. 34149.

Engine Troubles

Water in the Low-Pressure Cylinder. H. R. Low. Explains where the water comes from. 1000 w. Power—June 25, 1912. No. 33913.

Engine Valves

Flow Resistance in the Intake Valves of a Reciprocating Engine (Strömungswiderstände in den Steuerungsventilen einer Kolbendampfmaschine). E. Heinrich. Mathematical studies. Diagrams. 4500 w. Zeitschr des Ver deutscher Ing—July 27, 1912. No. 35542 D.

Entropy

Simplicity of the Entropy Chart. W. J. Crawford. Gives the chart and examples illustrating its use. 1500 w. Power—Oct. 22, 1912. No. 36946.

Evaporators

Heat Transmission in Vacuum Evaporator Tubes. Harry M'Cormack, H. C. Dormitzer, and E. P. Roleson. An account of experiments made to determine the efficiencies of a Swenson evaporator using tubes of four different materials—copper, steel, lead and tin. 3300 w. Chem Engr—July, 1912. No. 34876 C.

Exhaust Steam

Exhaust-Steam Utilization. A. B. Muirhead. Read at joint meeting of Scottish Branches of Nat. Assn. of Col. Mgrs. and

Assn. of Min. Elec. Engrs. Discusses the subject as related to collieries, and the problems to consider. 2000 w. Mech Wld—Nov. 10, 1911. Serial. 1st part. No. 28126 A.

Should Exhaust Steam be Wasted? P. Barrett Coulston. Read before the Manchester Geol. & Min. Soc. Gives examples of installations for utilizing exhaust steam and the results, the means by which the results were obtained, etc. 2000 w. Ir & Coal Trds Rev—Dec. 15, 1911. No. 29196 A.

Exhaust Steam Conversion in Steam Power Plants (Einige Dampfkraftanlagen mit Abwärmeverwertung). Max Höttinger. Discussion on the utilization of exhaust steam. Ills. Serial. 1st part 3300 w. Zeitschr des Ver deutscher Ing—Jan. 6, 1912. No. 30562 D.

Feed Pumps

Calculating the Sizes of Feed Pumps. Victor C. Vance. Illustrates by example, calculating the size of a boiler-feed pump for a typical installation. 1500 w. Power—May 21, 1912. No. 32961.

Report of Test of a Boiler Feed Pump of Boston Navy Yard Design, at the Engineering Experiment Station, Annapolis, Maryland. An account of test made to determine the efficiency, water rate per I. H. P., slip and duty at different speeds, discharge pressure and temperatures of water handled. Ills. 1800 w. Jour Am Soc of Nav Engrs—Feb., 1912. No. 31490 H.

Test of a Blake Vertical Simplex Boiler-Feed Pump at the Naval Engineering Experiment Station, Annapolis, Maryland. Test made to determine the mechanical efficiency, water rate in pounds of dry steam per I.H.P. per hour, slip and duty at different speeds, discharge pressures, and temperatures of feed water. 2000 w. Jour Am Soc of Nav Engrs—Aug., 1912. No. 36334 H.

Feed Water

Electrolytic Treatment of Water. D. van Arsdale. From a report by H. W. Cutshall, describing a plant for purifying boiler feed-water on the E. P. & S. R. R. 1200 w. Eng & Min Jour—July 13, 1912. No. 34426.

Bleeding Steam from Receivers of Triple Expansion Engines for Heating Feed Water. George M. Peck. Report of investigation carried out at the St. Louis water works. Plan. 1200 w. Eng News—July 18, 1912. No. 34648.

Feed-Water Heaters

Test of a Feed Water Heater at the Naval Engineering Experiment Station, Annapolis, Maryland. Test to determine the B. T. U. transmitted per sq. ft. of heating surface per hour, under varying conditions. Ills. 2500 w. Jour Am Soc of Nav Engrs—Feb., 1912. No. 31494 H.

Surface Combustion Steam Generator and Feed-Water Heater. Brief illustrated description of a design invented by Messrs. Bone, Wilson & McCourt. 1200 w. Mech Engr—Jan. 26, 1912. No. 30301 A.

Flue Gas

The Question of the Application of Flue Gas from Foundries and Mines for the Purpose of Machine Driving (Zur Frage der Abgasverwertung auf Hüttenwerken und Zechen unter besonderer Berücksichtigung des Maschinenbetriebes). Herr Schönburg. The first article deals with the possibilities of the utility of blast-furnace gases. Serial. 1st part. 2200 w. Elektrotech Rundschau—April 25, 1912. No. 32738 D.

Flue-Gas Analysis

The Bi-Meter CO_2 Recorder. Illustrated description of the instrument and its working. 700 w. Mech Engr—Nov. 10, 1911. No. 28122 A.

Combustion and Flue Gas Analysis. Charles M. Rogers. Brief outline showing theoretical relation between percentage of CO_2 and boiler efficiency. 1500 w. Power—July 2, 1912. No. 34147.

Flue Gas Analysis for Beginners. J. E. Terman. Explains the object of flue-gas analysis and the principle of operation, describing the apparatus needed. Ills. 2500 w. Power—Sept. 3, 1912. Serial. 1st part. No. 35710.

CO_2 Recorders. A. Vincent Clarke. Shows them to be essential for the attainment of maximum efficiency of combustion. 1000 w. Power—June 11, 1912. No. 33631.

A New Automatic Device for Determining the Carbonic Acid Content of Flue-gas (Eine neue selbsttätige Vorrichtung zur Bestimmung des Kohlensäuregehaltes in Rauchgasen). E. Müller. Describes apparatus. Ills. 2700 w. Zeit des Ver Deutscher Ing—Dec. 30, 1911. No. 29765 D.

Importance of the High Test of CO_2 in Boiler Flue Gases and Automatic Analysis and Record of Same. Abram T. Baldwin. Discusses problems of fuel waste, the importance of analysis, the calorific value, combination, smoke prevention and related subjects. Ills. 6000 w. Jour Assn of Engng Socs—March, 1912. No. 31786 C.

See also Flue-Gas Recorders, under *Measurement*.

Flue-Gas Explosions

Flue-Gas Explosions. Edw. Ingham. Describes some notable explosions, explaining the causes, and discusses means of avoiding them. 1800 w. Elec Rev, Lond—March 22, 1912. No. 31718 A.

Flue Gas Temperatures

Temperature Pendants. Gives a convenient means for determining flue gas temperatures. 1500 w. Sci Am Sup—Feb. 3, 1912. No. 30206.

Fuels

The Gasification of Fuel. C. E. Lucke. The present article considers the two fundamental processes carried out in the producer. Serial. 1st part. Ills. 5000 w. Engineering Magazine—Jan., 1912. No. 29210 B.

The Gasification of Fuel. Charles Edward Lucke. This second article of a series considers general structural arrangement of producer apparatus. 4000 w. Engineering Magazine—Feb., 1912. No. 30022 B.

The Gasification of Fuel. Charles Edward Lucke. Considers typical forms of producer construction in this third article of a series, showing the relations of fuel bed and coal and blast supply. Ills. 6000 w. Engineering Magazine—March, 1912. No. 30831 B.

The Gasification of Fuel. Charles Edward Lucke. This fourth part of a serial considers progress in producer design, giving constructive suggestions. Ills. 5500 w. Engineering Magazine—April, 1912. No. 31553 B.

The Effect of Temperature in the Carbonization of Coal, and Its Bearing Upon the Conservation of Our Coal Supplies. Vivian B. Lewes. From report of British Science Guild on "Natural Sources of Energy." 1500 w. Mech Engr—April 26, 1912. No. 32837 A.

The Calorimetric Value of Fuel. John G. A. Rhodin. Considers the determining and expressing of calorific values. 4000 w. Engr, Lond—March 29, 1912. No. 31895 A.

Fuels—A Discussion of Their Uses and Abuses. R. P. Bolton. Presidential address before the Am. Soc. of Heat. & Vent. Engrs. On the necessity of conserving the country's resources and the use of waste materials. 2000 w. Ir Trd Rev—Feb. 8, 1912. No. 30333.

Methods of Determining the Sulphur Content of Fuels, Especially Petroleum Products. Irving C. Allen and I. W. Robertson. 2500 w. U S Bureau of Mines—Tech. paper 26. No. 37058 N.

Utility of Inferior Fuels from the Dortmund Mines (Ausnutzung minderwertiger Brennstoffe auf Zechen des Oberbergamtsbezirk Dortmund). Committee report on the adaptability of low-grade coal for producer-gas. Ills. 2400 w. Glückauf—Nov. 11, 1911. No. 28821 D.

Firing Soft Soal Screenings. John S. Leese. Notes from the writer's experience with hints on the manner of managing the fires. 1200 w. Mech Wld—April 5, 1912. No. 31916 A.

Dried Bagasse as Fuel. A report of tests carried out on boiler plants using this refuse for steam raising. 1500 w. Engng—May 31, 1912. No. 33672 A.

Report on the Utilization of Peat Fuel for the Production of Power. B. F. Haanel. A record of experiments conducted at the fuel testing station. Ottowa, 1910-1911. Ills. 145 pps. Can Dept of Mines—No. 154. No. 36876 N.

Fuel Combustion

Notes on Fuel Combustion, Boiler Testing, Etc. Stewart F. J. Riddell. Discusses fuel combustion in its relation to the steam engine. 1000 w. Prac Engr—July 25, 1912. Serial. 1st part. No. 35152 A.

Fuel Economics

Fuel Economies in Factories. Dr. Charles E. Lucke. Abstract of paper read before N. Y. Sec. of Am. Chem. Soc. Compares advantages offered by steam and producer gas. 2500 w. Power—Jan. 9, 1912. No. 29510.

Fuel Purchasing

A Proposed Basis for Coal Purchase. John P. Cosgro. Explains a proposed system. 1500 w. Power—March 12, 1912. No. 31123.

The Economy to the Consumer Resulting from the Purchase of Coal Under Specifications. W. O. Collins. From a paper read before the Illinois Water Supply Assn. 3000 w. Engng & Con—March 27, 1912. No. 31619.

The Systematic Purchase of Coal. F. R. Hutton and J. L. Pultz. Outlines the practice of the Department of Water Supply, Gas and Electricity, New York City. 2500 w. Power—Feb. 27, 1912. No. 30782.

Fuel Tests

Steaming Tests of Coals and Related Investigations. Sept. 1, 1904, to Dec. 31, 1908. L. P. Breckenridge, Henry Kreisinger and Walter T. Ray. Gives the history and object of the fuel-testing plant, with an analytical study of the tests. 380 pages. U S Bureau of Mines—Bul 23. No. 31610 N.

The Relation of Chemical Composition to Calorific Power in Wood, Peat, and Similar Substances. H. C. Sherman and C. G. Amend. Gives data obtained in a brief study of this relationship in some woody fuels. 1000 w. Sch of Mines Qr—Nov., 1911. No. 29101 D.

See also Analysis, under MINING AND METALLURGY, *Coal and Coke.*

Gage Glasses

Water Gage Glasses. Charles S. Blake. Notes concerning their attachment and use. 1200 w. Locomotive—Jan., 1912. No. 30495.

Governors

Methods of Controlling Steam Engines. John Davidson. Illustrates and describes types of governors and regulators. 1800 w. Sci Am Sup—Dec. 9, 1911. No. 28694.

Heat-Drop

Available Heat-Drop. E. Buckingham. Discusses this term and its usefulness, combatting the suggestion that the use of it be discontinued. 2000 w. Engr, Lond—Aug. 9, 1912. No. 35304 A.

Heat Transmission

The Reduction in Temperature of Condensing Water Reservoirs Due to Cooling Effect of Air and Evaporation. W. B. Ruggles. Describes tests made to determine, if possible, a fairly reliable factor by the use of which the necessary size of a cooling reservoir for condensing water could be predetermined. Ills. 1000 w. Jour Am Soc of Mech Engrs—April, 1912. No. 31777 D.

The Reduction in Temperature of Condensing Water Reservoirs Due to Cooling Effects of Air and Evaporation. Discussion of W. B. Ruggles' paper on this subject. 1700 w. Jour Am Soc of Mech Engrs—Aug., 1912. No. 35350 D.

The Transmission of Heat into Steam Boilers. Henry Kreisinger and Walter T. Ray. An investigation of the heat-absorbing abilities of the heating surfaces of boilers, discussing the laws that determine the rate of heat transfer, and offering suggestions for applying these laws. 176 pps. U S Bureau of Mines—Bul 18. No. 35323 N.

Heat Carriers for Heat Engines. Discusses methods of transforming heat into useful work. 2200 w. Prac Engr—Feb. 2, 1912. Serial. 1st part. No. 30395 A.

The Heat Transmission of Hot Air in Tube Walls (Die Wärmeübergang von heisser Luft an Rohrwandungen). Heinrich Gröber. Mathematical discussion. 5400 w. Zeitschr des Ver deutscher Ing—March 16, 1912. No. 32040 D.

Historical

The Steam Apparatus and Fire Machines of Leonardo da Vinci (Dampfapparate und Feuermaschinen bei Leonardo da Vinci). F. M. Feldhaus. An historical sketch of the ideas of da Vinci with some of his drawings. 1500 w. Zeit d Oest Ing u Arch Ver—July 12, 1912. No. 35531 D.

Hoisting Engines

See same heading, under MINING AND METALLURGY, *Mining.*

Indicator Diagrams

A New Analysis of the Cylinder Performance of Reciprocating Engines. J. Paul Clayton. Describes investigations showing that the indicator diagram contains the evidence necessary for an almost complete analysis of cylinder performance. Explains methods employed. 14000 w. Jour Am Soc of Mech Engrs—April, 1912. No. 31776 D.

A New Analysis of the Cylinder Performance of Reciprocating Engines. J. Paul Clayton's paper is discussed. 8800 w. Jour Am Soc of Mech Engrs—Aug., 1912. No. 35353 D.

A New Analysis of Indicator Cards. Adapted from a paper by J. Paul Clayton. Describes means of determining from an indicator diagram an almost complete analysis of the cylinder performance. 3500 w. Power — June 18, 1912. No. 33757.

An Investigation of the Method Proposed by J. Paul Clayton for the Study of Steam Engine Pistons (Examen de la Méthode de M. J.-Paul Clayton pour l'Étude Expérimentale de la Machine a Vapeur a Piston). V. Dwelshauvers-Dery. Discusses paper read before the Am. Soc. Mech. Eng. Diagrams. 3000 w. Rev de Mecan—Aug. 31, 1912. No. 36191 E + F.

Combined Indicator-Diagrams. H. Keay Pratt. Explains how to construct such diagrams and the object. 3000 w. Mech Wld—April 19, 1912. No. 32486 A.

Indicators

Distortion of Indicator Drum Motion. Julian C. Smallwood. Gives results of experimental investigation of the inaccuracies of indicator drum motion. Ills. 2500 w. Power—Aug. 20, 1912. No. 35279.

Joints

Testing Flange Joints (Versuche mit Flanschenverbindungen). R. Baumann. Describes experiments on joints for steam pipe and engine construction. Ills. 7800

w. Zeitschr des Ver deutscher Ing—Feb. 8, 1912. No. 30570 D.

Locomobile

The Practical Running of the Locomobile. Warren H. Miller. An illustrated account of small combined boiler and engine units of remarkable steam efficiency. 2500 w. Elec Wld—Nov. 4, 1911. No. 27704.

Oil Fuel

The Economic Position of the Oil Fuel Question. Syndey H. North and G. Maitland Edwards. Reviews developments which have overcome most of the obstacles to the use of oil fuel; considers its economic aspects with special reference to England; and refers to the Armstrong-Mordan system for solidifying petroleum. 2500 w. Engr, Lond—Dec. 29, 1911. No. 29621 A.

The Advantages and Disadvantages of Liquid Fuel. Considers the subject in detail. 2200 w. Mech Wld—Aug. 9, 1912. No. 35295 A.

Boilers Fired with Liquid Fuel. Giulio Fumanti. Abbreviated translation of a paper read at Rome, Italy, on Nov. 12, 1911. Explains the advantages and disadvantages of liquid-fuel firing, reviews types of burners, and reports tests made for the Italian Navy. 2200 w. Engng—Feb. 2, 1912. No. 30406 A.

Oil-Fired Furnaces (Ueber einen Schmelzofen mit Oelfeuerung). Wilhelm Venator. Some of the advantages of such systems, with designs for burners and furnace arrangement. Ills. Serial. 1st part. 1200 w. Giess Zeit—June 1, 1912. No. 33544 D.

Oil Burning with Different Settings. Gives results of a series of tests made to determine the relative economy of different furnaces and the effect of variation in the draft when burning oil. Ills. 2000 w. Power—Feb. 6, 1912. No. 30269.

The Application of Coal Tar for Heat and Power Use (Teerölverwertung für Heiz- und Kraftzwecke). R. Hausenfelder. Description of burners, their arrangement, and the operation of such a plant, with results from the use of such fuel. Ills. 4600 w. Stahl u Eisen—May 9, 1912. No. 33501 D.

Fuel Oil Installation on the Great Northern Ry. E. E. Adams. An account of investigations leading to the fuel installation and illustrated description of details of the plant at Everett, Wash., and related information. 2500 w. Ry & Engng Rev—Dec. 9, 1911. No. 28746.

Oil Separators

The Massys Oil Separator (Déshuileur de vapeur Massys). Describes the mechanical arrangement of this device, and compares its efficiency with other types. Ills. 3000 w. Rev Industrielle—Jan. 13, 1912. No. 30628 D.

Electrolytic Oil Separation (Elektrolytische Oelabscheidung). W. Heym. Describes a process for separating oil from condenser water. 1500 w. Elektrochem Zeit—July, 1912. No. 35550 D.

Piping

Steam Power Plant Piping Materials. William F. Fischer. Considers the Materials used and the strengths and weights of the various thicknesses. 1500 w. Power—Oct. 1, 1912. No. 36429.

Steam Power Plant Pipe Fittings. William F. Fischer. Information concerning the proper use of various weights and materials of fittings for power plant piping. 1200 w. Power—Oct. 29, 1912. No. 37077.

Plant Design

Steam Power Plants. O. S. Lyford, Jr., and R. W. Stovel. Illustrates and describes types, designed by one company, showing that conventional design is not practicable, the bearing of location on cost, etc. General discussion. 14000 w. Pro Engrs' Soc of W Penn—Jan., 1912. No. 30811 D.

Plant Management

Management of Steam Power Plants. Suggestions as to the maintenance and economical operation of steam plants. 1500 w. Power—April 23, 1912. No. 32246.

Regulators

The Regularity and Regulation of Steam or Gas Engines (Sur la Régularité et les Régulateurs des Moteurs a Vapeur ou a Gaz). Ch. Reignier. A review of several types of regulators as applied to steam or gas engines. Ills. 3600 w. Rev de Mecan—April 30, 1912. No. 32762 E + F.

Safety Valves

Results of Tests on the Discharge Capacity of Safety Valves. E. F. Miller. Describes tests giving results both in form of a plot and numerically. Also addendum by A. B. Carhart. Ills. 4500 w. Jour Am Soc of Mech Engrs—Feb., 1912. No. 30693 D.

Results of Tests on the Discharge Capacity of Safety Valves. Discussion of the paper by E. F. Miller and A. B. Carhart presented at previous meeting. 2500 w. Jour Am Soc of Mech Engrs—Aug., 1912. No. 35351 D.

Smoke Prevention

Smoke, the Destroyer. R. C. Benner. Discusses the effect of smoke on architecture and some of the methods of cleaning and protecting. Ills. 1500 w. Sci Am—Aug. 31, 1912. No. 35651.

Coal Smoke and Its Practical Abatement. J. M. Searle. A discussion showing that smoke is wasteful and preventable. General discussion. 15000 w. Pro Engrs' Soc of W Penn—July, 1912. No. 35337 D.

The Dividends That Float Up the Chimney. S. B. Flagg. A discussion of fuel economy and what smoke means in dollars and cents. Ills. 2000 w. Sci Am—June 15, 1912. No. 33715.

Smokeless Chimneyless Steam Plants. Illustrates the municipal electric light and power station at Lichtenberg and the results of artificial draught. 1000 w. Sci Am Sup—June 8, 1912. No. 33472.

Smoke Prevention. Paul P. Bird. A study of the smoke problem and the possibilities of preventing smoke. Ills. Discussion. Also rules for firing in force in Chicago. 6500 w. Jour Cleveland Engng Soc—Dec., 1911. No. 29080 D.

Smoke Prevention with Steam Jets. J. A. Switzer. Illustrated account of a system that reduced the smoke about 90 per cent and increased the efficiency of the plant. 2500 w. Power—Jan. 16, 1912. No. 29630.

Economic Aspects of the Smoke Nuisance. John A. Switzer. Shows that smoke abatement is a measure of economy. Ills. 3000 w. Sci Am Sup—March 9, 1912. No. 31076.

Smoke Prevention. John S. Franklin. A study of fuel combustion. 3000 w. Cassiers' Mag—Sept., 1912. No. 36695 B.

The International Smoke Abatement Exhibition Held in London, March and April, 1912. George H. Perkins. An account of the work in this field in England. 4000 w. Jour Am Soc of Mech Engrs—Oct., 1912. No. 37102 D.

See also Smoke, under CIVIL ENGINEERING, *Municipal,* and Smoke, under RAILWAY ENGINEERING, *Motive Power and Equipment.*

Stacks

The Design of Tall Chimneys. Henry Adams. Aims to explain the principles that will guarantee stability and to apply them to practice. Ills. 6000 w. Soc of Engrs—Dec. 4, 1911. No. 29044 N.

Furnace Leader and Stack Proportions. E. M. Shealy. Discussion on relative carrying capacities of round and rectangular pipes and easy method of proportioning leaders and stacks. 3000 w. Met Work—July 19, 1912. No. 34634.

Chimneys and Chimney Draught. Considers chimneys where the draught is of importance. 1700 w. Prac Engr—June 28, 1912. No. 34316 A.

Troubles with and Cures for Defective Flues. C. T. Soden. Gives examples of trouble-making chimneys and chimney tops and describes a remedy and a successful top. 2000 w. Met Work—Nov. 17, 1911. No. 28105.

Steel Stacks. John S. Leese. Remarks on the advantages and disadvantages, their construction, etc. 2000 w. Prac Engr—Nov. 10, 1911. No. 28119 A.

Analysis of Cylindrical Reinforced Concrete Chimneys. Gives a method presented by I. Oesterblom in a paper before the Am. Soc. of Swedish Engrs. 1200 w. Eng Rec—Jan. 13, 1912. No. 29595.

A Chimney Stack of Reinforced Concrete. Oscar Faber. Brief account of the interesting features of a stack erected in London. Ills. 1000 w. Engng—Dec. 22, 1911. No. 29467 A.

Steam

Recent Research Work on the Properties of Steam. C. A. M. Smith and A. G. Warren. Traces the development of recent work in thermodynamics. 3500 w. Engng—Dec. 1, 1911. Serial. 1st part. No. 28779 A.

Experiments on Boiling in the Generation of Steam (Recherchees sur l'ebullition dans les générateurs de vapeur). M. Emanaud. Boiling in closed vessels to test theories on the circulation of water in steam generators. Ills. 3500 w. Génie Civil—Jan. 6, 1912. No. 30614 D.

Steam Economy

Economy in the Use of Steam. R. H. Rowland. Considers various ways of economizing steam. 2200 w. Mines & Min—March, 1912. No. 30968 C.

Steam Formulae

Formulae Connecting the Pressure and Temperature of Saturated Steam. S. Godbeer. Refers to two important series of experiments which furnish information for the determination of new constants for the formula, and gives the modified formula. 1000 w. Engng—Aug. 30, 1912. No. 35886 A.

Steam Loop.

The Steam Loop. John S. Leese. Brief description of the device and its limitations. 1200 w. Prac Engr—Dec. 8, 1911. No. 29043 A.

Steam Tables

Low Pressure Steam Tables. Lionel S. Marks. Gives tables of the properties of dry and saturated steam at pressures below that of the atmosphere. 3000 w. Power—July 16, 1912. No. 34453.

Stokers

Overfeed Stoker With Water-Cooling Features. Illustrated description of a new machine with details of its construction. 1000 w. Ir Trd Rev—Jan. 11, 1912. No. 29515.

Mechanical Stokers at the Mines de Dourges Co.'s Works, France. Illustrated description of this furnace plant. 1200 w. Engng—Dec. 22, 1911. No. 29468 A.

Automatic Stokers (I Focolari Automatici). Carlo Solari. Review of some of the more important European and American devices. Ills. Serial. 1st part. 4800 w. Monit Tecnico—May 10, 1912. No. 32792 D.

See also Boilers, under *Steam Engineering*, and Locomotive Stokers, under RAILWAY ENGINEERING, *Motive Power and Equipment*.

Stoker Test

Report of Test of a Murphy Stoker on a Babcock & Wilcox Boiler at the Naval Gun Factory, Washington, D. C. Illustrated description of boiler and appurtenances with report of tests. 2000 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33830 H.

Superheating

The High Degree Superheater: Its Economy, Operation and Maintenance. Gilbert E. Ryder. Read before the New England R. R. Club. Ills. 5300 w. Boiler Maker—June, 1912. No. 33696.

Superheating and the Superheater. L. B. Taylor. Explains the advantages of superheat, discussing types of superheaters and giving a formula for estimating the superheating surface required. 3000 w. Power—Nov. 7, 1911. No. 27789.

Superheated Steam. Embury A. Hitchcock. Gives results of experimental work obtained in the Mech. Engng. Lab. of Ohio State Univ. Ills. 2500 w. Jour Ohio Soc of Mech, Elec, & Steam Engrs—Vol. IV. No. 1. Paper 175. No. 28336 F.

Superheated Steam, Interesting Tests. An account of tests at the Univ. of Ohio. Ills. 2500 w. Power—Dec. 12, 1911. No. 28749.

The Battle of the Superheats. Robert H. Smith. Compares results of investigations made by Mr. Knoblauch and by Prof. Duchesne. 3000 w. Engr, Lond—Dec. 22, 1911. No. 29473 A.

Inquiry into the Researches of Armand Duchesne on the Properties of Superheated Steam (Examen des Recherches de M. Armand Duchesne sur les Propriétés de la Vapeur d'Eau Surchauffée). V. Dwelshauvers-Dery. A critical review of the work of Duchesne in this line. Diagrams. 7800 w. Rev de Mecan—March 31, 1912. No. 32760 E + F.

Duchesne's Experiments on Superheat. V. Dwelshauvers-Dery. Reviews the findings of an experimental study by Monsieur Duchesne. 3500 w. Power—July 23, 1912. No. 34699.

A Reply to Certain Criticisms on My Researches on the Properties of Superheated Steam (Réponse a Certaines Critiques Faites a mes Recherches sur les Propriétés de la Vapeur d'Eau Surchauffée). Armand Duchesne. In which is stated the points of difference in the author's theory with those previously expressed. Diagrams. 4200 w. Rev de Mecan—March 31, 1912. No. 32761 E + F.

The Use of Superheated Steam. John S. Leese. Considers points in connection with its adoption. 2000 w. Prac Engr—May 24, 1912. Serial. 1st part. No. 33449 A.

Superheated Steam—Its Effect Upon Power in the Cylinder. Charles R. King. A study, dependent on a new theory for revealing graphically the thermodynamic effect in the cylinders, shows superheated steam to be the reverse of an economical motive fluid in the cylinder. 3500 w. Engr, Lond—Aug. 9, 1912. No. 35302 A.

Effects of Superheated Steam on Cast-Iron Pipe. W. Campbell and J. Glassford. Read before the Int. Cong. for Testing Mat. Reports an investigation made to determine the nature of the corrosion; why some cast irons corrode, while others do not; and how the corrosion can be minimized. 1500 w. Mech Engr—Oct. 11, 1912. No. 36934 A.

Efficiency Tests on a Central Superheater (Leistungsversuch an einem Zentralüberhitzer). Paul Koch. Tables, methods and mathematical determinations for efficiency. Ills. 2700 w. Zeit f d Ges Turbinenwesen—May 30, 1912. No. 33556 D.

The Influence of Superheated Steam on the Design of Steam Engines, Locomobiles, Locomotives and Marine Engines (Der Einfluss des Heissdampfes auf die Ausgestaltung der Dampfmaschinen, Lokomobilen, Lokomotiven, und Schiffmaschinen). Hugo Lentz. Discusses change of designs made necessary by the introduction of superheated steam. Ills. Serial. 1st part. 1500 w. Zeit d Oest Ing u Arch Ver—Nov. 10, 1911. No. 28827 D.

British Practice in Superheating. Victor White. The advantages of superheating are discussed, and types of superheaters used in England are described. Ills. 3000 w. Power—Jan. 30, 1912. No. 30108.

Superheated Steam at Sea. P. C. Ashford. An illustrated article on the advantages and success thus far attained by the employment of superheated steam in marine engines. 2500 w. Cassier's Mag—Nov., 1911. No. 28186 B.

Economy Due to Superheated Steam in Marine Practice. Walter M. McFarland. Reports the performance of a number of vessels fitted with superheaters, and calls attention to some drawbacks to their satisfactory use. 3000 w. Int Marine Engng—July, 1912. No. 34156 C.

See also Locomotive Superheaters, under RAILWAY ENGINEERING, *Motive Power and Equipment.*

Thermodynamics

A Discussion of Certain Thermal Properties of Steam. G. A. Goodenough. The equation proposed by Linde is slightly modified and by means of the Clausius thermodynamic relation a formula for specific heat is derived, and other equations deduced. 4500 w. Jour Am Soc of Mech Engrs—April, 1912. No. 31773 D.

Reversibility in Relation to Entropy and to Adiabatic Processes. Aims to point out an unambiguous method of defining and using these terms. 2500 w. Engr, Lond—May 3, 1912. No. 32887 A.

The Second Law of Thermodynamics and the "Death" of Energy, with Notes on the Thermodynamics of the Atmosphere. Charles P. Steinmetz. The law that "without expenditure of some other kind of energy heat flows only from higher to lower temperatures," is discussed and its limitations shown. 4000 w. Gen Elec Rev—July, 1912. No. 34225 C.

The True Second Law of Thermodynamics. Jacob T. Wainwright. Editorial letter giving results of experimental investigation. 1400 w. Engr, Lond—June 21, 1912. No. 34354 A.

The Steam-Turbine Expansion Line on the Mollier Diagram, and a Short Method of Finding the Reheat Factor. Edgar Buckingham. Introductory explanations to those unfamiliar with the subject, with a discussion of the form, on this diagram, of the expansion line for wet steam flowing through a multistage turbine, and the development of a practical method for drawing the expansion line. Plate. 10500 w. Bul Bureau of Stand—Dec. 15, 1911. No. 29918 N.

The Steam-Turbine Expansion Line on the Mollier Diagram, and a Short Method of Finding the Reheat Factor. Edgar Buckingham. Explains the important properties of quantities of the Mollier diagram, discusses the form of the expansion line for wet steam flowing through a multi-stage turbine and develops a method for drawing the expansion line. 617 pps. Bureau of Stand—Report No. 167. No. 34799 N.

The Steam-Turbine Expansion Line of the Mollier Diagram, and a Short Method of Finding the Reheat Factor. Edgar Buckingham. An explanation of the Mollier diagram and a discussion of the form of the expansion line for wet steam flowing through a multi stage turbine and the development of a practical method for drawing the expansion line. 12700 w. Bul Bureau of Stand—Reprint No. 167. No. 36875 N.

Turbines

General Notes on Steam Turbines (Allgemeine Beziehungen der Dampfturbinen). A. Loschge. General considerations of various types. Serial. 1st part. 2000 w. Zeit f d ges Turbinenwesen—Dec. 20, 1911. No. 29720 D.

Recent Developments in Steam Turbine Practice. K. Baumann. Read before the Manchester Sec. of the Inst. of Elec. Engrs. Illustrated review of the development of the Parsons, Curtis, Rateau, and Zoelly types. 1800 w. Mech Engr—Jan. 19, 1912. Serial. 1st part. No. 30162 A.

The Present State of Development of Large Steam Turbines. A. G. Christie. Deals with leading types, some details of construction, the commercial results obtained, and new uses. 9500 w. Jour Am Soc of Mech Engrs—May, 1912. No. 33212 D.

The Present State of Development of Large Steam Turbines. Discussion of A. G. Christie's paper. 7000 w. Jour Am Soc of Mech Engrs—Aug., 1912. No. 35352 D.

New Developments in Steam Turbine Engineering. Edwin D. Dreyfus. A review of turbine development since 1884; types, etc. Ills. 5000 w. Elec Jour—April, 1912. Serial. 1st part. No. 32178.

New Developments in Steam Turbine Engineering. Edwin D. Dreyfus. Brief review of early development, and discussion of progress, service and applications. Ills. General discussion. 10500 w. Jour W Soc of Engrs — May, 1912. No. 33687 D.

Large Steam Turbine Development. A discussion of the present development of large steam turbine construction and of the field of the steam turbine both in this country and in Europe. Ills. 3000 w. Power—July 30, 1912. No. 34592.

Notes on Steam Turbines (Note sur les Turbines a Vapeur). A. R. Garnier. Mathematical discussion on the effective energy of steam in turbines. Diagrams. 5000 w. Rev de Mecan—June 30, 1912. No. 34574 E + F.

Heat Drop in Steam Turbines. Thomas B. Morley. Calls attention to an erroneous use of language common to many workers on steam turbine theory and design. 1200 w. Engr, Lond—March 8, 1912. No. 31263 A.

The Critical Speed of Turbine Shafting. Explains the theory of critical speeds and the calculation. 1200 w. Prac Engr—March 22, 1912. Serial. 1st part. No. 31721 A.

The Speed Problem in Steam Turbine Design. Compiled from advance sheets of a book issued by the De Leval Co. Discusses its solution, with special reference to a new type of turbine. Ills. 5800 w. Ind Engng—June, 1912. No. 34055 C.

Increase of Bore of High-Speed Wheels by Centrifugal Stresses with Formulae for Force and Shrink Fits. Sanford A. Moss. A general discussion of stresses in a rotating wheel, and an account of work on the problem, and of preventing damage. 4500 w. Jour Am Soc of Mech Engrs—Sept., 1912. No. 36300 D.

Impulse and Reaction Turbines. F. R. Low. Points out the essential difference, explaining the application of the velocity diagram to each. Ills. 1500 w. Power—Sept. 3, 1912. No. 35709.

Low Pressure Turbines—Why to Use, When to Use, and How to Use. P. M. Lincoln. Deals with methods of utilization of the power. 5000 w. Elec Jour—Jan., 1912. No. 30014.

Use of Low-Pressure Turbines in Mining Work. George E. Edwards. Reviews the conditions to be taken into account when considering using a low-pressure turbine. Ills. 2500 w. Min & Engng Wld—Jan. 13, 1912. No. 29588.

Low Pressure Turbine Installation. B. R. T. Collins. Shows the saving effected by installing a 1500-Kw. low-pressure turbo-generator in connection with a non-condensing Corliss engine. 1500 w. Power—April 2, 1912. No. 31710.

Partial Admission Steam Turbines (Partiell beaufschlagte Dampfturbinen). J. Karrer. Mathematical description of this type of turbine. 2500 w. Zeit f d Ges Turbinenwesen—Nov. 30, 1911. No. 28890 D.

Steam Turbines of Partial Admission Type (Les Turbines a Vapeur a Admission Partielle). J. Karrer. Comparison of velocity-stage and expansion-stage turbines. 2400 w. Génie Civil—Nov. 4, 1911. No. 28858 D.

Exhaust Steam Turbines at Mines. John C. Cunningham. Read before the Aust. Inst. of Min. Engrs. Describes method of utilizing part of the power ordinarily lost in exhaust. Ills. 4500 w. Mines & Min—Jan., 1912. No. 29296 C.

Tests on a 1000 K.W. Exhaust Steam Turbine at the Neu-Iserlohn II. Mine of the Harpener Mining Co., Dortmund (Untersuchung einer Abdampfturbinenanlage von 1,000 K.W. auf der Zeche Neu-Iserlohn II. der Harpener Bergbau Akt.-Ges., Dortmund). Herr Schulte. Results of power tests. Ills. 3800 w. Zeitschr des Ver deutscher Ing—March 30, 1912. No. 32048 D.

Exhaust Steam Turbine at Republic Mine, Mich. George E. Edwards. Brief illustrated description of this plant. 700 w. Min & Engng Wld—June 29, 1912. No. 34138.

Hydraulic Regulation of the Sulzer Turbine and Trials at the 2000 KW. Turbine of the Basle Central Station (Die neue hydraulische Regelung der Sulzer-Dampfturbine und Versuche an der 2000 KW-Turbine des Basler Elektrizitatswerkes). A. Stodola. A description of this type of steam turbine and the system of its regulation. Ills. Serial. 1st part. 4800 w. Zeit des Ver Deutscher Ing—Oct. 14, 1911. No. 28441 D.

Ljungström Steam-Turbine. Illustrated detailed description of this radial-flow reaction turbine, its design and tests. Plates. 4500 w. Engng—April 12, 1912. Serial. 1st part. No. 32273 A.

The Ljungström Reaction Steam Turbine (La Turbine a Vapeur a Réaction, Système Ljungström). Illustrated description of this Swedish design. Plate. 38000 w. Génie Civil—May 18, 1912. No. 32785 D.

The Ljungström Steam Turbine (Die Ljungström - Dampfturbine). Illustrated description of the main features in this type. Serial. 1st part. 1500 w. Die Turbine—June 5, 1912. No. 34535 D.

The Ljungström Steam Turbine (Die Ljungström-Dampfturbine). K. Hoeffer. Details of construction and design. Ills. Serial. 1st part. 3000 w. Zeit f d Ges Turbinenwesen — July 30, 1912. No. 35568 D.

Rateau-Smoot Low Pressure Turbine. Section and description of mixed-flow machines of the type named. 1200 w. Power—Aug. 27, 1912. No. 35439.

The Belluzzo Steam Turbine in Operation (Le turbine a vapore Belluzzo per impianti fissi). Description of operation and efficiency of this turbine. Ills. Serial. 1st part. 2300 w. Industria—May 12, 1912. No. 32795 D.

A New Steam Turbine. Brief illustrated description of the recently developed De Laval multi-cellular type. 2500 w. Ir Age — May 30, 1912. No. 33331 C.

Radial-Flow Steam Turbines. Mathematical analysis of performance. 2000 w. Engng—May 3, 1912. No. 32882 A.

A New Development in Steam Turbines. Describes turbine invented by J. H. Van Deventer. A combination of helical gears converted into an impact and reaction steam turbine for general application. Ills. 500 w. Ir Age—Feb. 1, 1912. No. 30193 C.

Ferranti's Steam Turbine. Illustrated description of a turbine in which the blade-carrying stator is enclosed within an outer casing and is free from the usual distortional stresses. 1500 w. Mech Engr—Jan. 26, 1912. No. 30300 A.

The Sturtevant Steam Turbine. Illustrated description of the latest model. 1500 w. Power—Feb. 20, 1912. No. 30484.

The Kienast Steam Turbine. Illustrated description with results of tests. 1000 w. Power—April 9, 1912. No. 31853.

A New Small Steam Turbine. Illustrated description of the new Class C De Laval prime mover, and the use of velocity stages. 1500 w. Ir Age—Aug. 22, 1912. No. 34342 C.

The Eyermann Steam Turbine. Wilhelm H. Eyermann. Illustrated description of a radial-flow steam turbine of recent design. 1500 w. Power—Sept. 17, 1912. No. 35975.

7500 H. P. Steam Turbine Constructed at the Franco Tosi Shops (Turbine à vapeur de 7500 H. P. construite par les ateliers Franco Tosi). H. Eric. Plans and brief description of this turbine. 2000 w. Rev Industrielle—Sept. 14, 1912. No. 36670 D.

Steam Turbines for Auxiliary Purposes on Board Ship. Ernest N. Janson. Considers the advantages and applications, types of turbines, etc. Ills. 5500 w. Int Marine Engng—Feb., 1912. No. 30212 C.

Geared Steam Turbine for the Rolling Mill. Illustrated description of a turbine at Calderbank Steel Works, Scotland, connected to the mill through two sets of reduction gears and using live and exhaust steam. 1200 w. Ir Age—May 16, 1912. No. 32900 C.

See also Gas Turbines, under *Combustion Motors*; Turbine Building, under *Materials of Construction;* Power Plants, under *Power and Transmission;* Cincinnati, O., under *Steam Engineering*; and Turbines, under MARINE AND NAVAL ENGINEERING.

Turbine Blades

A Diagrammatic Model of the Surface of the Francis Blades (Die räumliche Darstellung einer Francis-Schaufelfläche). Alex. Pfeiffer. Description of model composed of numerous plates showing the action of the turbine blades. Ills. 1400 w. Zeit f d Ges Turbinenwesen—Nov. 20, 1911. No. 28889 D.

See also same heading under *Hydraulic Machinery.*

Turbine Designs

Comparative Economy of the Impulse, Gas, and Gas-Steam Turbines (Beitrag zur Frage der Wirtschaftlichkeit der Gleichdruck- Gas- und Gas-Dampf-Turbinen). J. Nadrowski. A mathematical discussion and an interesting comparative system of curves. Serial. 1st part. 1200 w. Die Turbine — Oct. 5, 1911. No. 28450 D.

Drawings for the Pattern and Core-Box of a Francis Turbine Runner. George M. Peek. Considers the practical layout and construction of working drawings for the runner. Ills. 1600 w. Eng News—Dec. 21, 1911. No. 29123.

Calculation of Centrifugal Compression (Calculs des compresseurs centrifuges). Ch. Lamales. The design of steam turbines discussed by the mathematical application of the laws of physics. Ills. 4200 w. Tech Mod—Nov., 1911. No. 28865 D.

The Calculation of Steam Turbines under Specific Heads (Die Berechnung der Dampfturbinen mit Hilfe des spezifischen Gefälles). Guido Zerkowitz. Mathematical discussion based upon the studies of Stodola and others. Diagrams. Serial. 1st part. 3600 w. Zeit f d ges Turbinenwesen—March 20, 1912. No. 32004 D.

Notes on the Predetermination of Steam Turbine Distributors and on the Question of Clearance Expansion (Beitrag zur Vorausberechnung von Leitworrichtungen für Dampfturbinen und zur Frage der "Spaltexpansion"). Paul Christlein. Studies on inlet design. Ills. Serial. 1st part. 1500 w. Zeit f d Ges Turbinenwesen—April 10, 1912. No. 32318 D.

Turbine Economy

Improvement in the Output of Steam Turbines with the Use of Disc Escapements (L'Amélioration du rendement des Turbines a vapeur par l'emploi des "Disques d'Échappement"). M. Delaporte. Statements on the recent improved results in turbine economy from this cause. Ills. 3000 w. Rev de Mecan—June 30, 1912. No. 34573 E + F.

The Production of Higher Vacuum in Steam Turbines with Small Exhaust Secions (Die Ausnutzung hoher Luftleere in Dampfturbinen bei kleinen Austrittquerschnitten). F. Lösel. Discussion on the phenomenon attending experimental tests in producing 90 per cent vacuum. Ills. 5000 w. Zeitschr des Ver deutscher Ing—June 22, 1912. No. 34556 D.

See also Gas Engine Economy, under *Combustion Motors.*

Turbine Material

Metals Employed in the Construction of Steam Turbines (De l'emploi des métaux dans la construction des turbines a vapeur). Pierre Breuil. Discusses alloys and material in several designs, and suggest qualifying conditions to be met by their use in the various parts of turbines. 5600 w. Tech. Mod.—June 1, 1912. No. 34002 D.

Turbine Operation

Running a Steam Turbine. Paul Hoffman. Prize paper. Considers details of both small and large turbines, the attendances, operation and related matters. 6000 w. Power—Aug. 6, 1912. No. 35067.

Running a Steam Turbine. F. R. Brosius. Considers placing the turbine in and out of service, prevention and cure of turbine troubles, operation, etc. 4000 w. Power—Aug. 20, 1912. No. 35278.

On the Best Distribution of Load Among a Number of Similar Steam-Turbine Stages Working in Series. E. Buckingham. States the problem and gives mathematical reasoning. 1800 w. Jour Am Soc of Nav Engrs—May, 1912. No. 33832 H.

Methods of Operating Mixed Pressure Turbines with Engines Driving Mechanical Loads. R. C. Muir. Describes two methods of regulating or load balancing between the turbine and the engine, which may be employed when high economy is of importance. 1500 w. Gen Elec Rev—July, 1912. No. 34227 C.

Mixed Pressure Turbine Installation of the Tennessee Coal, Iron & R. R. Co. E. J. Best. Illustrated detailed description of the new power house and its equipment. 2200 w. Gen Elec Rev—July, 1912. No. 34228 C.

A Mixed Pressure Turbine Installation on Traction Service. E. G. Morgan. Gives a typical example where great increase in station capacity has been obtained without any increase in boiler equipment. 1200 w. Gen Elec Rev—July, 1912. No. 34229 C.

A Mixed-Pressure Turbine Installation at a Steel Works. B. E. Semple. Describes a 7,000 k. w. mixed-pressure Curtis turbine installed at the plant of a large steel manufacturing corporation. Ills. 1800 w. Gen Elec Rev—July, 1912. No. 34230 C.

Mixed Pressure Turbine Installation. John S. Leese. Explains the conditions which led to the installation and gives reports of the operating results. 1200 w. Power—Oct. 22, 1912. No. 36947.

Turbine Speed

Experiments to Determine the Coefficient of Velocity in Steam Turbines (Untersuchungen über das allgemeine Verhalten des Geschwindigkeitskoeffizienten von Leitvorrichtungen des praktischen Dampfturbinenbauer). Paul Christlein. Gives results and presents formulae and diagrams. Ills. 6000 w. Zeit des Ver Deutscher Ing.—Dec. 16, 1911. No. 29762 D.

Turbine Testing

Arrangements and Test Results of ths Turbine Laboratory at the German Science High School in Brünn (Einrichtung und Versuchsergebuisse des Turbinenlaboratoriums an der deutschen Technischen Hochschule in Brünn). Victor Kaplan. Account of some of the work at the laboratory with results. Ills. 5600 w. Zeit d Oest Ing u Arch Vereines—April 26, 1912. No. 32732 D.

Parsons-Turbine Determinations (Zur Berechnung der Parsons-Turbine). August Kriegbaum. Mathematical determinations of efficiency under given conditions. Diagrams. Serial. 1st part. 1600 w. Zeit f d Ges Turbinenwesen — May 10, 1912. No. 33555 D.

Valve Gear

Style "B" Pilliod Locomotive Valve Gear. Description showing the re-arrangement that has greatly simplified this gear.

1200 w. Am Engr & R R Jour—Nov., 1911. No. 27770 C.

Valve Leakage

The Leakage of Steam Past Piston Valves. H. Denzil Lobley. Reports experimental investigations and results of the actual leakage of a piston valve as a possible source of loss of steam. Ills. 2500 w. Engr, Lond—Feb. 9, 1912. No. 30675 A.

Valves

Slide or Gate Valves (Schieber oder Ventil). Ernst Claassen. Discussion on the relative advantages of the two types in steam engine practice. Ills. 2700 w. Zeitschr des Ver deutscher Ing—March 23, 1912. No. 32045 D.

Water Hammer

The Danger of Water Hammer. Report on a boiler explosion at a Yorkshire colliery caused by water hammer action. Ills. 1200 w. Col Guard—May 31, 1912. No. 33669 A.

Water Hammer and Its Elimination. John S. Leese. Deals with the rules governing water hammer, the phenomenon in steam lines, and the successful elimination. 2000 w. Mech Wld—May 31, 1912. No. 33668 A.

Winding-Engine

5500-Horse-Power Corliss Winding Engine. Plate, illustrations and description of engines being built at Sandycroft for installation in Southern India. 1500 w. Engng—Oct. 27, 1911. No. 27331 A.

TRANSPORTING AND CONVEYING

Aerial Tramways

Suspended Railways or Fixed Cableways (Schwebebahnen oder feste Seilbahnen). R. Zehnder-Spörry. Discussion on the relative merits of either system as shown in the Alpine roads. 4000 w. Zeit d Oest Ing u Arch Ver—June 7, 1912. No. 33568 D.

A Cableway for Transporting Coal (Le Funivie pel Trasporto di carbone.) Describes in detail the line, and stations of the aerial tramway between "Sarona an San Giuseppe. Ills. 4900 w. Monit Tecnico—Sept. 10, 1912. No. 36688 D.

Installations for Transporting Minerals on the Isle of Elba, Elba Company (Installations de transbordement des minerais de la Société Elba, à l'Ile d'Elbe). An aerial tramway from the mines which empties directly upon ore vessels. Ills. 2400 w. Génie Civil—Jan. 6, 1912. No. 30612 D.

The Elba Iron Ore Loading Plant. Illustrated description of an interesting plant for handling the extensive deposits of iron ore on the island of Elba. 1500 w. Sci Am Sup — June 1, 1912. No. 33285.

Ore Transporting on Island of Elba. C. A. Tupper. Illustrates and describes the aerial tramways and other arrangements for unloading and conveying materials. 1600 w. Ir Age—June 20, 1912. No. 33852.

A Remarkable Aerial Ropeway. Illustrates and describes a recent construction for some tin mines in Bolivia, three miles above sea level. 700 w. Engr, Lond—March 1, 1912. No. 31155 A.

Argentine Government Aerial Tram. C. A. Tupper. Illustrated description of the government owned line extending from Upusungos to Chilecito, a distance of about 22 miles, with a difference in elevation of 11,574 feet. 2500 w. Eng & Min Jour—March 23, 1912. No. 31476.

Construction of Argentine Tram. C. A. Tupper. Illustrates and describes features of interest in the construction of this tramway in the Argentine Republic. 2000 w. Eng & Min Jour—April 6, 1912. No. 31825.

Operation of Argentina Tramway. C. A. Tupper. Illustrated article describing the operation of the 22-mile aerial tramway between Chilecito and Upulungos. 2000 w. Eng & Min Jour—Sept. 28, 1912. No. 36896.

Aerial Tramways at Bingham Canyon, Utah. William Hewitt. Illustrated description of a notable installation of the Bleichert system for mining purposes. 2200 w. Min & Engng Wld—Sept. 7, 1912. No. 35846.

See also Plants, under MINING AND METALLURGY, *Mining*.

Ash Handling

The Mechanical Disposal of Ashes from Steamers. J. F. Zimmer. Illustrates and describes apparatus for avoiding dirt and lessening labor. 4000 w. Cassier's Mag—July, 1912. No. 34908 B.

Cinder Conveyors in the Ouest-Lumière Plants, Puteaux (Appareils de Manutention des Cendres dans les usines de l'Ouest-Lumière, à Puteaux-Seine). Description of derricks and conveyors. Ills. & Plate. 2600 w. Génie Civil—Feb. 3, 1912. No. 30625 D.

See also Ropeway, under *Transporting and Conveying*.

Belts

Care of Belting in the Factory. A. E. Derby. Suggestions for keeping belts clean, proper lacing and testing. Ills. 1800 w. Power—Jan. 9, 1912. No. 29509.

The Use of Steel Belts in Power Transmission. Abstract translation from *Zeit. Ver. Deut. Ing.* Summarizes the results obtained by the Eloesser firm and describing installations. 1500 w. Mech Wld—Jan. 5, 1912. Serial. 1st part. No. 29678 A.

Belts—How to Select and Manage Them. Owen Linley. Explains the fitting of belts to their work. Ills. 2500 w. Wood Craft—Feb., 1912. No. 30217.

Cables

Installation and Maintenance of Colliery Cables. H. Gordon Fraser. Read before the E. of Scotland Branch of the Assn. of Min. Elec. Engrs. Considers types of cable, their installation, maintenance, etc. Ills. 4000 w. Ir & Coal Trds Rev—Jan. 5, 1912. No. 29685 A.

Cableways

The Evolution of the Cableway. Henry M. Payne. Notes six stages in the evolution. Ills. 1400 w. Eng & Min Jour—June 29, 1912. No. 34128.

An African Freight Cableway. C. A. Tupper. Illustrated description of a cableway in German East Africa to transport valuable timber from the Usambara Mts. 2000 w. Eng News—Feb. 29, 1912. No. 30935.

Extraordinary Cableways (Ungewöhnliche Drahtseilbahnen). Georg. von Hanffstengel. Description of some of the more noticeable cableways as found in various parts of the world. Ills. Serial. 1st part. 3800 w. Zeitschr des Ver deutscher Ing—April 20, 1912. No. 32722 D.

A Cableway of Unusual Length (Eine Drahtseilbahnanlage von ungewöhnlichen Abmessungen). Describes the 8 km. cableway of the Orconera Company in Southern Spain. Ills. Serial. 1st part. 1000 w. Glasers Ann—Aug. 1, 1912. No. 36148 D.

See also same heading, under RAILWAY ENGINEERING, *Conducting Transportation.*

Car Dumping

A New Car Dumper (Ein neuer Wagenkipper). A new type of swing dumping device, especially devised to unload cargoes. Ills. 2700 w. Zeitschr des Ver deutscher Ing—March 16, 1912. No. 32041 D.

Coal Handling

Notes on the Use of Alternating Current in Unloading Coal. W. N. Ryerson and J. B. Crane. Illustrated detailed description of the unloading equipment at the docks in Duluth-Superior harbor, and the operation. 4500 w. Pro Am Inst of Elec Engrs—March, 1912. No. 31580 F.

Mechanical Unloading of Colliers in the Harbor of Hamburg, and the Self-Loading Steamers "Emma Sauber" and "Herman Sauber" (Die Maschinelle Entlöschung von Kohlenschiffen im Hamburger Hafen und die Selbstlöschdampfer "Emma Sauber" und "Herman Sauber"). Carl Commentz. Description of buckets, jib-cranes, traveling cranes, etc. Ills. Serial. 1st part. 3200 w. Schiffbau—Aug. 28, 1912. No. 36126 D.

Discussion on "Notes on the Use of Alternating Current in Unloading Coal." Discussion of paper by W. N. Ryerson and J. B. Crane, at Pittsburgh, Pa., April 27, 1912. 6500 w. Pro Am Inst of Elec Engrs—Oct., 1912. No. 37141 F.

New Coal Loading Appliance at Sunderland Docks. Illustrated description of a novel appliance designed to handle the coal with the minimum of breakage. 3000 w. Engr, Lond—April 26, 1912. No. 32850 A.

Coal Handling Plant at Duluth. Illustrated description of traveling bridges serving railroad racks, boats and storage yard. 2000 w. Ir Age—Dec. 7, 1911. No. 28677.

See also Conveyors, under *Transporting and Conveying.*

Conveyor Belts

Wear of Conveyor Belts. Reginald Trautschold. Gives an analysis of the causes and means for their reduction. 3000 w. Ir Age — July 4, 1912. No. 34250 C.

Conveyors

A Study of Mechanical Conveyors. Lincoln DeG. Moss. Extracts from lectures at Columbia Univ. Reviews development and studies types. Ills. 11500 w. Sch of Mines Qr—Jan., 1912. Serial. 1st part. No. 30778 D.

Notes on the Use of Belt Conveyers. John J. Ridgway. Considers practical matters affecting the efficiency. 2000 w. Power—March 19, 1912. No. 31235.

Some Notes on Band Conveyors. F. Tissington. First of a series of articles showing their many uses, adaptability and arrangement for various duties. 2000 w. Can Engr—July 11, 1912. Serial. 1st part. No. 34484.

Conveying and Elevating Machinery, Its Cost and Commercial Value. Reginald Trautschold. The present article considers belt conveyors, their capacities, speeds, costs of operation and maintenance, etc. 3000 w. Ind Engng—Oct., 1911. Serial. 1st part. No. 27606 C.

New Coal Conveyors on the Humber. Illustrated description of conveyors erected on the recently completed pier at Hull. 1200 w. Col Guard—Oct. 27, 1911. No. 27729 A.

Coal-Face Conveyors. Harold H. Ridsdale. Abstract of paper read before the S. Staffordshire and Warwickshire Inst. of Min. Engrs. Discusses the economical working of thin seams, describing types of conveyors and their use. Discussion. 4000 w. Ir & Coal Trds Rev—Dec. 22, 1911. No. 29478 A.

Coal Handling with the Robins Belt Conveyor (Transport der Kesselheizkohle mit Robins-Gurtförderer am Valerie-Schachte in Schwarz). G. Ryba. Describes the operation of this conveyor in the Valerie Gorge in Bohemia. Ills. Serial. 1st part. 1600 w. Oest Zeit f Berg- u Hüttenwesen —Dec. 2, 1911. No. 29707 D.

Combined Ash and Coal Storage. W. O. Rogers. Illustrated description of plant at Wilkes-Barre, Pa., in which the coal and ash are handled by the same conveyor. 800 w. Power—April 30, 1912. No. 32486.

Boilers With and Without Conveyors. Henry J. Edsall. Gives calculations showing the saving effected under certain conditions by the installation of an overhead bin and conveyor system. 1500 w. Power—Aug 6, 1912. No. 35069.

An Electric Hoist Traveler for Placing the Concrete Floor of a Viaduct. C. M. Kurtz. Illustrates and describes details of traveler used on a plate-girder viaduct of the So. Pacific Co. in San Francisco. 1000 w. Eng News—Jan. 25, 1912. No. 30095.

Cranes

The Location and Arrangement of Control-gear on Cranes. Edward G. Fiegehen. Gives the qualifications desirable in crane control gear, considering each qualification in minute detail. Ills. 1500 w. Mech Wld—Dec. 8, 1911. Serial. 1st part. No. 29047 A.

Points in Crane Construction and Design. Otto Abdt. Suggestions for the design of overhead cranes. Ills. 2000 w. Mach, N Y—Jan., 1912. No. 29286 C.

The Management and Care of Cranes in Steelworks. Remarks, with specifications for 60-ton electric overhead traveller. 1500 w. Mech Wld—Jan. 26, 1912. No. 30308 A.

New Brakes, Especially for Foundry Cranes (Neue Bremsen, insbesondere für Giessereikrane). Herr Wintermeyer. Recent improvements in crane operation and control. Ills. 1800 w. Giesserei-Zeitung —Feb. 1, 1912. No. 30577 D.

Safety Appliances for Electric Driven Cranes and Hoists (Sicherheitsschaltung für elektrisch betriebene Krane und Hebezeuge). Herr Wintermeyer. Discusses electrically operated brakes and other safety devices. Ills. Serial. 1st part. 2200 w. Elektrotech Rundschau—March 21, 1912. No. 32062 D.

Lattice Braced Crane Jibs. Shows how to calculate the cross section for a braced jib, and how one or two bracing formulæ might be applied. Ills. 1500 w. Mech Wld—April 26, 1912. No. 32840 A.

Crane Construction for Work Shops (Ueber Kranbauformen für Werkstätten). Hubert Hermanns. Illustrated description of large travelling cranes for foundries and machine works. 1600 w. Gress Zeit —April 15, 1912. No. 32707 D.

A Comparison in Crane Girder Design. Edward G. Fiegchen. Introductory remarks on the need of suitable standards of strength and performance in crane design, and compares alternative designs for a pair of overhead crane girders with respect to their performance. Ills. 700 w. Mech Wld—June 7, 1912. Serial. 1st part. No. 33781 A.

New Foundry Cranes (Neuere Giessbettkrane). F. Heym. A recently built travelling crane with two lifting magnet arms, and a third battering arm capable of delivering blows at the rate of 60 per minute, for breaking up gray iron, etc. Ills. 2400 w. Stahl u Eisen—May 2, 1912. No. 33500 D.

The Calculation of Rolling Loads Applied to Overhead Travelling Cranes (Notes sur le calcul des charges roulantes appliquées aux ponts-roulants). E. Barbieux. Formulas for the calculation when the traveller has the maximum moment. Diagrams. Serial. 1st part. 4400 w. All Industrielle—Sept., 1912. No. 36204 D.

Overhead Traveling Cranes. Joseph Horner. Illustrates and describes modern handling machinery in workshops. 3500 w. Cassier's Mag—Sept., 1912. No. 36690 B.

Modern Shop Electric Crane Wiring. Ernest G. Bradshaw. Considers the best means of supporting electric crane wires in shops, standard practice for the installation of outdoor cranes, and rules for obtaining the highest efficiency. 1500 w. Am Mach—Oct. 17, 1912. No. 36810.

Electric Cranes for Steel-Mill Service. E. Friedlaender. Read before the Iron & Steel Elec. Engrs. Discusses their usefulness, efficiency, management, and general serviceability. 1800 w. Mech Wld—Dec. 8, 1911. No. 29049 A.

Some Types of American Electric Cranes (Quelques types Americains d'appareils électriques de levage). F. C. Perkins. Brief description of various types. Ills. 1200 w. L'Électricien—Dec. 2, 1911. No. 29781 D.

Electrically Operated Locomotive Cranes. L. F. Grant. Illustrates and describes types. 800 w. Elec Jour—March, 1912. No. 31604.

Musker and Davison's 2-Ton Compensated Electric Luffing Crane. Illustrations, with brief description. 800 w. Engng—Jan. 26, 1912. No. 30321 A.

200-Ton Electric Revolving Cantilever Crane. Illustrated detailed description of the crane at Kure, for the Imperial Japanese navy. Plate. 2000 w. Engng—March 15, 1912. No. 31528 A.

30-Ton Electric Travelling Crane. Illustrations with brief description of crane for Kure dockyard. 400 w. Engng—July 26, 1912. No. 35166 A.

120-Ton Electric Travelling Crane. Drawings and description of a powerful overhead travelling crane of exceptional span, and operated electrically. 800 w. Engr, Lond—Aug. 30, 1912. No. 35899 A.

35-Ton Steam Breakdown Crane. Illustrated description of a crane constructed for Buenos Aires Western Ry. Co., Ltd. 500 w. Engng—Dec. 15, 1911. No. 29185 A.

Five-Ton Steam Goliath Crane. Illustrated description of four steel-framed cranes for Singapore. 700 w. Engr, Lond —Dec. 22, 1911. No. 29475 A.

Harbor Cranes at Foreign Ports. Illustrates and describes types to suit various conditions. 1200 w. Eng News—Sept. 12, 1912. No. 35926.

See also Floating Cranes, under MARINE AND NAVAL ENGINEERING; Foundry Transportation, and Safety Devices, under *Machine Works and Foundries*, and Stresses, under *Measurement*.

Derricks

A Forty-Ton Floating Derrick. Illustrates and describes details of a derrick recently put in service on construction work in Cuba. 800 w. Eng Rec—March 2, 1912. No. 30987.

Electrical Machinery

Electrical Equipment for Hoisting and Conveying Machinery (Elektrische Ausrüstungen auf Hebe- und Transportmaschine). W. Vogel. General specifications for the necessary equipment for any kind of transporting machine. 2000 w. Elek Kraft u Bahnen—Feb. 24, 1912. No. 31369 D.

Electric Transports

See same heading, under ELECTRICAL ENGINEERING, *Power Application.*

Elevators

The "Paternoster" Continuous Elevator (Ascensori a movimento continuo, O ascensori "Paternoster"). U. Quintavalle. An endless chain elevator with several compartments. Ills. 2500 w. L'Industria—March 10, 1912. No. 31422 D.

The Action of the Stiegler Elevator (Disposition des Ascenseurs Stiegler). Rod. Escher. Presenting the action and arrangement of this hydraulic elevator. Ills. 4500 w. Alliance Industrielle—March, 1912. No. 31416 D.

Direct-Current Elevator Controllers. W. H. Patterson. Illustrates and describes types. 1000 w. Elec Jour—April, 1912. No. 32180.

The Power Requirements of Electric and Hydraulic Hoists (Der Kraftverbrauch von elektrischen und hydraulischen Hebezeugen). P. Eilert. Discussion on relative costs in the operation and installation of these systems. Ills. 4800 w. Zeitschr des Ver deutscher Ing —July 6, 1912. No. 34559 D.

Elevators, with Special Reference to Installation in Federal Buildings Under Control of the Treasury Department. Nelson S. Thompson. Description of good elevator designing practice. 1500 w. Am Archt—Sept. 11, 1912. Serial. 1st part. No. 35904 C.

See also Grain Elevators, under *Transporting and Conveying*.

Freight Handling

Handling Freight from Ships' Holds to Cars and Warehouses, Using Motor Trucks. Describes the system in operation on the Savannah docks. Ills. 2000 w. Eng Rec—May 25, 1912. No. 33075.

The Mechanical Handling of Freight. Discussion of the paper by Samuel B. Fowler presented previously. Ills. 10000 w. Jour Am Soc of Mech Engrs—July, 1912. No. 34762 D.

Grain Elevators

Grand Trunk Pacific Elevator at Fort William, Ont. Illustrated description of this large grain handling terminal and its construction. 2500 w. Can Engr—Nov. 16, 1911. No. 28145.

Central-Station Power for Grain Elevators. Gives results obtained in numerous plants and the advantages of motor drive in this field. Ills. 3500 w. Elec Rev & W Elect'n—June 29, 1912. No. 34139.

Haulage

See same heading, under MINING AND METALLURGY, *Mining*.

Hoisting Engines

See same heading under MINING AND METALLURGY, *Mining;* and Electric Hoists, under ELECTRICAL ENGINEERING, *Power Applications.*

Hydraulic Coal Tips

The Remarkable Garston Dock's Coal Loading Hoisting Plant. Frank C. Perkins. Illustrates and describes the hydraulic coal tips and their operation. 1000 w. Marine Rev—Nov., 1911. No. 27972.

Loading Machines

Machines for Handling Railway Ties. R. P. Black. Machines and methods used by the K. & M. Ry. in W. Va. are described. Ills. 2000 w. Eng News—Jan. 4, 1912. No. 29392.

Ore Handling

Ore Handling at Ray, Arizona. C. L. Edholm. Illustrated description of the mechanical handling appliances at these mines. 700 w. Eng & Min Jour—Dec. 9, 1911. No. 28701.

A Great Lakes 15,000-Ton Ore Carrier. R. D. Williams. Illustrated detailed description of the Schoonmaker, a Great Lakes steamer. 2500 w. Ir Trd Rev—Jan. 4, 1912. No. 29371.

Modern Ore-Handling Methods in Spanish Mines. C. A. Tupper. Illustrates and describes the surface operations, and particularly the ore-washing plant and conveying system of the Orconera Iron Ore Co., Ltd., near Bilbao. 2500 w. Min & Engng Wld—Jan. 20, 1912. No. 29866.

Conveying Ore to Vessels in Inaccessible Coasts. C. A. Tupper. Illustrates and describes plants constructed to meet such conditions. 3000 w. Min & Engng Wld—July 20, 1912. No. 34686.

Package-Handling

The Package-Handling System at the New American Express, New York. Illustrated description of labor-saving facilities and plan of operation at the new terminal just west of the Penn. station. 2500 w. Eng Rec—March 30, 1912. No. 31655.

Packing

Packing Lathes for Shipment. H. M. Wood. Considers the packing of machine tools to prevent damage in transit, describing methods. Ills. 1200 w. Am Mach—April 25, 1912. No. 32298.

Pneumatic Tubes

Pneumatic Mail Service in Italy (La Posta Pneumatic in Italia). Describes the systems in Rome, Milan and Naples, and shows methods used in laying the tubes, planning stations, etc. Ills. and Plates. 2300 w. Industria—Sept. 29, 1912. No. 36689 D.

Ropeway

Aerial Ropeway for a Shropshire Quarry. Illustrated description of an interesting ropeway recently constructed in Great Britain for transporting stone to the nearest railway. 2500 w. Engr, Lond—Jan. 26, 1912. No. 30325 A.

See also Aerial Tramways, under *Transporting and Conveying.*

Tractors

A Novel Light Steam Tractor. Illustrations and description of a tractor with air condenser and draught gear. 900 w. Sci Am Sup—April 20, 1912. No. 32175.

Traverser

See Furnace Charger, under *Machine Works and Foundries.*

Tube Carriers

New Tube Carriers and Operating Machinery (Neure Rohrpost- und Rohrpostmaschinenanlagen). H. Kasten. Describes applications of the tube delivery service in shops and dwellings, and explains operation and machinery. Ills. Serial. 1st part. 4500 w. Zeitschr des Ver Deutscher Ing—Jan. 13, 1912. No. 30565 D.

Wire Ropes

Wire Ropes for Lifting Appliances, and Some Conditions That Affect Their Durability. Daniel Adamson. Discusses the quality of material and size of wire, and the diameter of pulleys and arrangement of ropes. 4000 w. Inst of Mech Engrs—July, 1912. No. 35203 N.

MISCELLANY

Acetylene

Acetylene Lighting. Vivian B. Lewes. First of these articles discussing the use of acetylene for domestic lighting. The present number considers the manufacture of calcium carbide. 1000 w. Archt, Lond—May 31, 1912. Serial. 1st part. No. 33655 A.

The Use of Acetlyene. Vivian B. Lewes. A review of twenty years' progress. 2500

w. Sci Am Sup—Aug. 31, 1912. No. 35652.

Address

Ostwald's Energetics as a Moral Force and Law, and Ives Colorimeter and Color Photography. Henry Hess. Presidential address. 7500 w. Pro Engrs' Club of Phila—April, 1912. No. 33116 D.

Agricultural Machinery

Machines at the General Agricultural Exhibit (Les Machines au Concours Général Agricole). H. Pillaud. The first part discusses the exhibits of tractor plows. Ills. Serial. 1st part. 3600 w. Tech Mod—April 15, 1912. No. 32768 D.

New Methods for Mechanical Plowing (Nouveau Procédé de Labourage Mécanique). Louis Petit. Illustrates new features in the use of tractor plows. Discussion by M. Julien. 8000 w. Bul Soc d'Encour—April, 1912. No. 32747 E + F.

See also Agriculture, under ELECTRICAL ENGINEERING, *Power Applications;* and Motor Plows, under *Automobiles.*

Brick Machinery

Building a Brick-Making Machine. C. A. Rogers and Lloyd Smith. Illustrated description of a machine having a capacity of 40,000 bricks per day. 1500 w. Am Mach—March 21, 1912. No. 31278.

The Brick Industry in Italy (L'Industria laterizia in Italia). Review of labor conditions, plants and machinery in Italian brick making. Serial. 1st part. 2500 w. Il Cemento—Jan. 15, 1912. No. 31418 D.

China

Primitive Methods and Tools in China. F. A. Foster. Illustrates and describes primitive tools, some of which are still in use. 2000 w. Am Mach—June 20, 1912. No. 33801.

Congress

The 41st Congress for Delegates and Engineers at the International Convention of the Boiler Superintendents' Association (Die 41. Delegierten- und Ingenieur-Versammlung des Internationalen Verbandes der Dampfkessel-Ueberwachungs-Vereine). Abstracts from four pages on questions of boiler practice. 5800 w. Glückauf—March 23, 1912. No. 32030 D.

Cotton Gin Machinery

Special Cotton-Gin Machinery. Ethan Viall. Illustrated detailed description of the brushes used to remove cotton lint from the saw teeth, and other interesting devices. 2500 w. Am Mach—June 13, 1912. No. 33639.

Distilling

Fractional Distillation Apparatus. Sectional drawing and description of a new type introduced in France by J. Robert, for all kinds of distillation processes. 600 w. Met & Chem Engng—Jan., 1912. No. 29317 C.

Self-Cleaning Still. Illustrated description of an automatic self-cleaning still devised by W. H. McCune. 1200 w. Met & Chem Engng—Jan., 1912. No. 29316 C.

Dust Collectors

Dust Collectors (Entstaubungsanlagen). Norbert Wechsler. Describes an apparatus similar to the vacuum cleaner except that it cleans by the use of compressed air. Ills. 2000 w. Zeit d Oest Ing u Arch Ver—July 27, 1912. No. 35534 D.

Exhibitions

Manchester and Salford Smoke-Abatement Exhibition. Brief review of the exhibits. 2500 w. Engng—Nov. 17, 1911. No. 28358 A.

The Smithfield Club Show. Illustrates and describes steam tractors, producer-gas engines, etc., on exhibition at this show in England. 4000 w. Engr, Lond—Dec. 8, 1911. No. 29061 A.

Thermo-Motors at the International Industrial Trades Exposition, Turin, 1911 (Die Wärmemotoren an der Internationalen Industrie- und Gewerbeausstellung Turin 1911). P. Ostertag. Description of some of the leading types exhibited. Ills. Serial. 1st part. 3000 w. Schweiz Bau—Jan. 27, 1912. No. 30542 D.

Explosions

Explosion of a Devulcanizer. Report of the Bd. of Trade investigation of the explosion Oct. 4, 1910, in the works of the North-Western Rubber Co., Ltd., at Litherland. 2500 w. Mech Engr—Dec. 15, 1911. No. 29221 A.

Flour Mills

Flour Milling and Mill Engineering. Abstract of paper by B. W. Diedrick and of the discussion. 1800 w. Jour Am Soc of Mech Engrs—May, 1912. No. 33215 D.

Equipment of a Modern Flour Mill on a Gradual Reduction System. John F. Harrison and W. W. Nichols. An illustrated general outline of the process of milling by gradual reduction, with a review of progress in the mechanical construction of flour mills, and the process of manufacture. 5000 w. Jour Am Soc of Mech Engrs—April, 1912. No. 31775 D.

Fountain Pens

See Manufactories, under *Machine Works and Foundries.*

Gas By-Products

By-Products in Gas Manufacture. Charles E. Munroe. An interesting illustrated study of this industry and the by-products—coke, gas, carbon, tar, ammoniacal liquor and spent purifying material, either lime or oxides and related matters. 7800 w. Jour Fr. Inst. July, 1912. No. 34626 D.

Gas Industry

Commercial and Financial Aspects of the Gas Industry. George B. Cortelyou. Lecture delivered at the celebration of the centenary of the introduction of gas as an illuminant. Reviews the history, the production and prices, and related matters. 10000 w. Jour Fr Inst—June, 1912. No. 34024 D.

Gas Plants

The Work of a Municipal Gas Testing Station. Edward K. Hammond. Describes a station maintained to ascertain the quality of the gas supplied to the city, discussing the most advanced practice. Ills. 3300 w. Chem Engr—Aug., 1912. Serial. 1st part. No. 35385 C.

The New Gas Plant at Lausanne (La nouvelle usine à gaz de la ville de Lausanne, à Malley). W. Cornaz. General description of this plant and its construction. Ills. Serial. 1st part. 3100 w. Bul Tech d l Suisse Romande—Feb. 25, 1912. No. 31394 D.

Gem Engraving

Gem Engraving. Cecil Thomas. Describes the methods and work of the different periods. Ills. Also discussion. 5800 w. Jour Soc of Arts—Feb. 16, 1912. No. 30776 A.

Great Britain

Some Fallacies and Facts Concerning Engineering Works in Great Britain. W. A. Martin. Illustrated brief description of works visited and methods observed. 3000 w. Can Engr—Aug. 8, 1912. Serial. 1st part. No. 35131.

Guns

Rifled Artillery. George Greenhill. Describes some recent experiments and discusses causes of gun failures. 2000 w. Engr, Lond—Nov. 17, 1911. No. 28862 A.

The Davis Gun-Torpedo. Illustrated description of the gun-torpedo designed by Com. Cleland Davis, and report of result of tests made by the U. S. Government. 1200 w. Engr, Lond—Feb. 23, 1912. No. 31048 A.

The Question of Light Field Howitzers (La Question de l'Obusier Léger de Campagne). D. Renaud. Description of the Schneider rapid-fire, field howitzer of 105 millimeter bore. Ills. 5500 w. Génie Civil —May 11, 1912. No. 32783 D.

Heat Theory

The Caloric Theory of Heat. From Prof. H. L. Callendar's address before the British Assn. Explains suggested changes in the present theory of heat. 8000 w. Engr, Lond—Sept. 13, 1912. No. 36273 A.

Prof. Callendar's Address to Section A of the British Association. Abstract. Considers the nature of heat and the caloric theory. 4000 w. Elect'n, Lond—Sept. 6, 1912. No. 35988 A.

Igniters

The Application of Pyrophoric Alloys. Illustrates and describes various applications of spark-forming alloys, explaining their defects and advantages in ignition. 1500 w. Sci Am Sup—Feb. 17, 1912. No. 30441.

Inventions

The Inventions of John Kay (1704-1770). Henry Trueman Wood. Gives documents, letters, and account of his invention of the fly-shuttle, which was of great importance in the textile industry. 11800 w. Jour Soc of Arts—Dec. 8, 1911. No. 29032 A.

Knife Manufacture

See Shop Practice, under *Machine Works and Foundries.*

Laboratory

New Mechanical Engineering Laboratory at Belfast. Describes the laboratory recently built in connection with the Municipal Technical Inst. 4500 w. Engr, Lond—Dec. 1, 1911. No. 28764 A.

Match Plates

The Manufacture of Aluminum Match Plates. H. Cole Estep. Illustrates and describes details of Goodale Co.'s process. 4000 w. Foundry — June, 1912. No. 33408.

Mechanics

Review of Applied Mechanics (Revue de Mécanique Appliquée). L. Lecornu. Covers briefly some of the major developments along mechanical lines within the past decade. 8500 w. Rev Gen des Sciences—July 30, 1912. No. 35572 G.

Meta-Mechanics

Meta-Mechanics: A Plea for Precision. Calls attention to faults that need correcting. 4500 w. Engng—Aug. 30, 1912. No. 35890 A.

Optics

Presidential Address at the Optical Convention. Silvanus P. Thompson. Reviews the development, the theories, and work of prominent investigators, optical instruments, etc. 12000 w. Engng—June 28, 1912. No. 34384 A.

Paper Mills

The Plant of the Spanish River Pulp & Paper Mills, Limited. Illustrated description of the plant, its equipment, and operation. 1500 w. Can Engr—June 6, 1912. Serial. 1st part. No. 33633.

Growth and Present Operation of the J. M. Voith Factory at Heidenheim-on-the-Brenz (Die Entwicklung und die neuzeitlichen Leistungen der Maschinenfabrik von J. M. Voith in Heidenheim a. d. Brenz). Illustrated description of this paper manufactory and its mechanical installations. Plates. 7000 w. Zeitschr des Ver deutscher Ing—June 8, 1912. No. 34549 D.

Phonographs

Making Edison Phonographs. Ethan Viall. Illustrates and describes details of shop practice. 2000 w. Am Mach—March 7, 1912. No. 31068.

Standardization

Standardization in Manufacturing. H. F. Chadwick. Explains some of the standard methods evolved by the Westinghouse Company. Ills. 1000 w. Elec Jour—May, 1912. Serial. 1st part. No. 33207.

Sugar Mill

A Large Sugar Mill. Illustrated description of a 14-roller milling plant, with rollers 40 in. in diameter and 84 in. long, for an installation in Argentine Republic. 1500 w. Engr, Lond—March 1, 1912. No. 31153 A.

Textile Industry

The Loom and Spindle: Past, Present, and Future. Luther Hooper. Illustrates and describes ancient and modern looms and the art of spinning. 5000 w. Jour Soc of Arts—Sept. 6, 1912. Serial. 1st part. No. 35982 A.

Development of the Textile Industry in the United States (Dévelopment de l'Industrie Textile aux États-Unis). D. De Prat. Account of the nature and size of this industry. 4500 w. Génie Civil—Dec. 16, 1911. No. 29794 D.

Recent Progress in Textile Coloring (Les progrès récents de l'industrie tinctoriale). Eug. Grandmougin. Details the operation of producing and coloring mercerized and silk finished cloths, etc. Serial. 1st part. 4800 w. Génie Civil—Jan. 6, 1912. No. 30613 D.

The Württemberg Textile and Paper Industry (Die württembergische Textil- und Papierindustrie). Otto Johannsen. Outline of the growth and development of these industries, and present importance, with description of plants. Ills. 9500 w. Zeitschr des Ver deutscher Ing—June 15, 1912. No. 34551 D.

Tile Molding

Molding Cylinders with Outer Flanges or Wide-Flanged Pipes in Loam (Ueber das Formen von Zylindern mit äusseren Flanschen oder von grossen Flanschröhren in Lehm). W. Venator. Describes molding methods. Ills. 2000 w. Stahl u Eisen—April 1, 1912. No. 32020 D.

Molding External-flange Cylinder or Large Flange Pipe in Loam. Drawings and description. 1000 w. Mech Wld—April 26, 1912. No. 32839 A.

Vacuum Cleaners

Notes on Vacuum Cleaners. Discusses portable vacuum stationary cleaners, types of pumps, driving motors, and related subjects. 2500 w. Elec Rev, Lond—July 19, 1912. No. 34598 A.

The Art of Vacuum Cleaning. Austin H. Hart. A practical discussion of present methods and appliances. 2000 w. Heat & Vent Mag—March, 1912. Serial. 1st part. No. 31563.

Tests of Vacuum Cleaning Tools and Exhausters. M. S. Cooley. Read before the Am. Soc. of Heat. and Vent. Engrs. Describes tests made to determine the requirements of a first-class cleaning system. Ills. 2500 w. Heat & Vent Mag—Feb., 1912. No. 30448.

Tests of Vacuum Cleaner Apparatus. M. S. Cooley. Gives comparative data on the performance of different types and suggests a method of acceptance test. 1800 w. Eng News—April 11, 1912. No. 31940.

Tests of Portable Vacuum Cleaners. C. A. Pierce. Report of tests of ten cleaners of various designs. 1800 w. Elec Wld—March 2, 1912. No. 30995.

Steam Consumed by Vacuum Cleaner. J. V. Hunter. Gives results of a test upon a steam-ejector type of vacuum cleaner, showing the steam consumption at different vacuums and loads. Ills. 2000 w. Power—March 5, 1912. No. 31001.

Vacuum Cleaning Equipment on Steamship. Drawings and description of details of an automatic vacuum cleaning system and machine operated by steam. 1200 w. Met Work—June 28, 1912. No. 34094.

See also Dust Collectors, under *Miscellany*.

Waste

Utilizing Waste Materials in the South. James C. Lawrence. Explains some methods used and the products. 2500 w. Mfrs' Rec—Feb. 22, 1912. (Special.) No. 30754 D.

Waste Waters

The Waste Water in the Manufacture of Precious Metal Wares and the Determination of the Precious Metal Content (Die Abwasser der Edelmetallwarenfabriken und die Bestimmung des enthaltenen Edelmetals). A. Mahringer. Treating on the losses in the manufacture of platinum, gold and silverwares. Serial. 1st part. 1800 w. Elektrochem Zeitschrift—Feb., 1912. No. 31300 D.

Watch Making

Notes on the Calculation of Watch Balances (Apercu du calcul du balancier des montres). Prof. Pfeiffer. Mathematical formulae and tables. Diagram. 5500 w. All Industrielle — July, 1912. No. 35569 D.

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COAL AND COKE

Accidents

The Hastings Coal Mine Disaster. A description of the mine and rescue work, and the probable cause. Ills. 2000 w. Mines & Min—Aug., 1912. No. 34939 C.

Preliminary Statement on Coal Mine Accidents in the United States. Statistics covering 1910, 1911 and the first four months of the current year. 1200 w. U S Bureau of Mines—June, 1912. No. 33949 N.

Alaska

Alaska Coal-Land Problems. H. Foster Bain. Explains the problems to be solved and the writer's views as to the advantages of a leasing system. Discussion by R. W. Raymond and by William H. Hampton 12500 w. Bul Am Inst of Min Engrs—Aug., 1912. No. 35368 F.

The Alaska Coal Situation and Suggested Remedies. Falcon Joslyn. Abstract of address before the Am. Min. Cong. Explains the difficulties that retard the development of the country, and the needed legislation to remove them. 3000 w. Min & Engng Wld—Nov. 11, 1911. No. 27985.

Geography in the Development of Alaskan Coal. Alfred H. Brooks. Reprint of a paper read before the Assn. of Am. Geog. Discusses the principles which govern the economics of mineral fuel supply and applies them to the Alaska coal fields. Map. 3500 w. Min & Engng Wld—July 27, 1912. No. 34873.

Matanuska Valley Coalfields, Alaska. G. C. Martin and F. J. Katz. Describes the coal and the mining conditions. 1500 w. Min & Sci Pr—April 6, 1912. No. 31924.

Alberta

Coal-Mining in Alberta in 1910. A comparison of output during recent years. 800 w. Col Guard—April 17, 1912. No. 32479 N.

The Coalfields of Alberta. E. H. Cunningham Craig. Information concerning these extensive deposits and the quality of the coal. 1200 w. Min Jour—June 29, 1912. No. 34818 A.

Analysis

Methods of Analyzing Coal and Coke. Frederic M. Stanton and Arno C. Fieldner. Describes the original methods and such modifications as experience has shown advisable. Ills. 5500 w. U S Bureau of Mines—Paper 8. No. 31291 N.

The X-Ray Examination of Coal. Gives radiographs supplied by M. Henri Couriot, with descriptive matter. 800 w. Col Guard—July 5, 1912. No. 34470 A.

The Use of X-Rays in the Examination of Coal. F. C. Garrett, and R. C. Burton. Read before the N. of Eng. Inst. of Min. & Mech. Engrs. Also discussion. Illustrations and report of results. 2200 w. Ir & Coal Trds Rev—June 7, 1912. No. 33796 A.

Fusing Temperature of Coal Ash and Its Relation to Rate of Combustion. Erwin G. Bailey. Deals with the formation of clinkers. 5000 w. Jour Ohio Soc of Mech, Elec, & Steam Engrs—Vol. IV. No. 1. Paper 176. No. 28387 F.

The Causes for Variations in Volatile Matter Determinations. S. W. Parr. Considers the conditions causing variation and their control, the most important being the speed of decomposition in the early carbonization of the coal. 1600 w. Chem Engr—May, 1912. No. 33139 C.

The Chemical Characteristics of Lignite (Zur chemischen Charakteristik der Braunkohlen). Ed. Donath. Analytic methods of comparison for various lignites. 3300 w. Oest Zeit f Berg u Hüttenwesen—May 25, 1912. No. 33511 D.

The Constituents of Coal Soluble in Phenol. J. C. W. Frazer and E. J. Hoffman. An investigation to obtain information regarding the composition of coal and the nature of its constituents. 4000 w. U S Bureau of Mines—Tech paper No. 5. No. 34614 N.

What Is Anthracite (Was ist Steinkohle)? Ed. Donath. An analysis of the characteristics and composition of anthracite. Serial. 1st part. 1800 w. Oest Zeitschr f Berg- u Huttenwesen—Feb. 10, 1912. No. 31326 D.

Notes on the Calculation of Heating Value of Coals from Their Analyses. O. L. Kowalke. Brief consideration of proposed methods. 700 w. Wis Engr—Dec., 1911. No. 29072 C.

Preparation of Coal, Ash, Mineral, etc. (Préparation des Charbons, Cendrées, Minerais, etc.). M. Hanappe. Description of the assay method of the Maison Beer. Serial. 1st part. 6500 w. Alliance Industrielle—Nov., 1911. No. 28854 N.

Report of the Committee on Standard Methods for Determining the Constituents of Foundry Coke. 1000 w. Am Found Assn—Sept. 24, 1912. No. 37144 N.

Anthracite

The Derringer Anthracite Stripping. Illustrated description of the geological conditions in north-east Pennsylvania, and the removal of large quantities of coal from pockets near the surface. 1000 w. Mines & Min—Aug., 1912. No. 34938 C.

Arkansas

Coal Mining in Arkansas. Information from the Arkansas Geol. Surv. report by A. A. Steel dealing with the geology and entry driving methods. Map and Ills. 3000 w. Mines & Min—Nov., 1911. No. 27617 C.

Australia

West Australian Coal Industry. H. Allerton Cowper. Describes the Collie deposits and their development, reviewing their history. 3000 w. Aust Min Stand—Jan. 4, 1912. No. 30291 B.

The State Coal Mine, Wonthaggi, Victoria. Australia. Charles M. Clark. Detailed description of the mine and its equipment. 1700 w. Col Guard—April 26, 1912. No. 32841 A.

Austria

The Krakau Coal Basin (Das Krakauer Kohlenbassin). Fr. Bartonec. A brief review of the economical situation in the field, discussing the industry, transport tariffs, waterways and the administrative conditions. 3200 w. Oest Zeit f Berg- u Hüttenwesen—Jan. 6, 1912. No. 30517 D.

Anthracite Review of Rossitz, Zbeschau and Oslavania (Das Rossitz-Zbeschau-Oslavaner Steinkohlenrevier). Franz Franz. Geologic and analytic review of this coal field. Diagrams. Serial. 1st part. 2400 w. Oest Zeitschr f Berg- u Hüttenwesen—Feb. 3, 1912. No. 31324 D.

Baths

Miners' Baths. Illustrates and describes practice in different countries. 3000 w. Ir & Coal Trds Rev—Nov. 24, 1911. Serial. 1st part. No. 28676 A.

Miners' Baths. From the Report on Mines & Quarries by R. A. S. Redmayne. Gives particulars as to what has been done in Great Britain and on the Continent. Ills. 1500 w. Col Guard—Jan. 12, 1912. No. 29903 A.

Miners' Baths. H. F. Bulman and W. B. Wilson. Information gathered during a visit to some of the newest installations of baths in Westphalia, Belgium, and the north of France. Ills. 3500 w. Ir & Coal Trds Rev—Feb. 16, 1912. No. 30805 A.

See also Miner's Baths, under *Mining.*

Belgium

Development of the Campine Coalfield. H. A. F. Stuckmann. Trans. from *Stahl und Eisen.* Information concerning this new coalfield in Belgium. 2500 w. Ir & Coal Trds Rev—March 29, 1912. No. 31901 A.

Bituminous

See Combustion, under MECHANICAL ENGINEERING, *Combustion Motors.*

Breakers

The Buck Mountain Coal Breaker. Illustrated description of the most advanced practice in cleaning and preparing anthracite. 3500 w. Mines & Min—June, 1912. No. 33355 C.

Briquettes

A Promising Industry. Guy E. Mitchell. Gives statistics of American fuel briquette manufacture. 2000 w. Sci Am Sup—July 20 1912. No. 34654.

Briquette Plant for the Italian Navy. Brief illustrated description of a plant for making "eggettes." 800 w. Col Guard—May 24, 1912. No. 33458 A.

Spontaneous Combustion of Lignite Briquettes (Zur Frage der Selbstentzündlichkeit von Braunkohlenbriketts). F. W. Hinrichsen and S. Taczak. Results of numerous experiments and investigations upon the subject. Ills. Serial. 1st part. 3800 w. Glückauf—Oct. 21, 1911. No. 28429 D.

See also Briquetting, under *Ore Dressing and Concentration.*

British Columbia

Bear River Coal Field, B. C. C. F. J. Galloway. A detailed description of this promising field. 800 w. Can Min Jour—May 15, 1912. Serial. 1st part. No. 32964.

Coal-Mining in British Columbia in 1911. Extracts from the "Preliminary Review and Estimate of Mineral Production for Year 1911." 2000 w. Col Guard —April 17, 1912. (Special.) No. 32478 N.

Coal Resources of the Upper Skeena—Mining Developments Around Hazelton. Describes the country opened by the Grand Trunk Pacific and the resources, including an immense deposit of anthracite. Maps and Ills. 6500 w. B C Min & Engng Rec—April, 1912. No. 33951.

Notes on the Groundhog Coal Basin, Skeena District, B. C. G. S. Malloch. Information concerning the location, geology, character of the coal and transportation facilities. 800 w. Trans Can Min Inst—Vol. XV. Part I. No. 34380 N.

Canada

The Production of Coal and Coke in Canada During the Calendar Year 1910. John McLeish. Information from the annual report on mineral production. 6000 w. Can Dept of Mines—No. 116. No. 30058 N.

The Coal Resources of Canada. A summary account from the Report of the Commission of Conservation, published in 1911. 3500 w. Col Guard—April 17, 1912. (Special.) No. 32476 N.

The Coal Production of Canada. Information from official reports of 1910 and 1911. 2500 w. Col Guard—April 17, 1912. (Special.) No. 32477 N.

See also Province in question, under *Coal and Coke.*

Cape Breton

Early Mining of Coal in Glace Bay Districts, C. B. J. C. Mitchell. Read before the South Cape Breton Min. Soc. Describes the methods and appliances used. Ills. 3000 w. Can Min Jour—Aug. 15, 1912. No. 35312.

Carbonization

The Carbonization of Coal. Vivian B. Lewes. This first lecture of a series discusses the composition of coal. 7500 w. Jour Soc of Arts—Dec. 22, 1912. Serial. 1st part. No. 29888 A.

China

Coal Mining in Northern China. J. L. Dobbins. An account of the primitive methods employed. Ills. 3000 w. Mines & Min—Aug., 1912. No. 34943 C.

Experiences on a Chinese Coalfield. George S. Caldwell. Abstract of a paper read before the Manchester Geol. & Min. Soc. An account of the Lai Heu Ho coalfield, the method of working and Chinese characteristics. 2000 w. Ir & Coal Trds Rev—May 17, 1912. No. 33282 A.

See also same heading, under *Iron and Steel.*

Coal-Cutters

A Rope-Driven Coal-Cutter. Wilfred L. Spence. Read before the Inst. of Min. Engrs. Illustrates and describes the machine and method of driving. 3000 w. Col Guard—June 7, 1912. No. 33783 A.

A Rope-Driven Coal-Cutter. Wilfred L. Spence. Read before the Inst. of Mine Engrs. Illustrated description of a wire-rope driven coal-cutter, its operation, advantages, etc. 4500 w. Mech Engr—June 28, 1912. No. 34322 A.

Coal-Cutting Machinery. W. Bolton Shaw. Abstract of paper read before the Manchester Assn. of Engrs. Discusses the various types used at present and the advantages of electricity and compressed air for driving them. 4000 w. Elect'n, Lond—Dec. 22, 1911. No. 29453 A.

Coal-Cutting Machinery. W. Bolton Shaw. Abstract of paper read before the Manchester Assn. of Engrs. Illustrates and describes types. 1800 w. Mech Wld —Dec. 1, 1911. Serial. 1st part. No. 28762 A.

Coal Dust

A Summary of Our Knowledge Concerning Coal Dust in Mines. Ira C. F. Statham. Read before the S. Staff. Min. Students' Old Boys' Soc. Reviews experimental investigations and preventive measures, and remedies. 6000 w. Ir & Coal Trds Rev—Nov. 17, 1911. No. 28367 A.

Coal Dust. James Ashworth. Discusses the influence of compression, percussion, and detonation in causing and transmitting explosions. 1800 w. Mines & Min—Nov., 1911. No. 27619 C.

Some Phases of the Coaldust Question. W. Galloway. Presidential address to the So. Wales Inst. of Engrs. Reviews early and recent phases of the question, with investigations of causes of colliery explosions. 4000 w. Col Guard—Jan. 26, 1912. Serial. 1st part. No. 30314 A.

Coaldust in Mines. Dr. J. Harger. Abstract of paper read before the Liverpool Sec. of the Soc. of Chem. Ind. Discusses coaldust explosives, giving results of experimental work. General discussion. 2500 w. Col Guard—Feb. 23, 1912. No. 31031 A.

The Coaldust Question. W. E. Garforth. Abstract of presidential address to the Inst. of Min. Engrs., dealing with the danger of coal dust in mines. 5000 w. Col Guard—June 7, 1912. No. 33785 A.

Shot-Firing and Coal Dust. Information from report by Victor Watteyne and Emmanuel Lemaire, in *Ann. des Mines de Belgique*, describing important experiments in Belgium. 1200 w. Col Guard—Nov. 3, 1911. No. 28029 A.

Oxidation and Distillation of Coal-Dust. J. Taffanel, G. Le Floch, and A. Durr. Experimental investigations. 1800 w. Col Guard—Aug. 9, 1912. No. 35298 A.

The American Coal-Dust Experimental Station. Dr. John Cadman. Read before the N. Staffordshire Inst. of Min. & Mech. Engrs. The Bruceton station and its equipment is described. General discussion. 4000 w. Ir & Coal Trds Rev—Dec. 15, 1911. No. 29199 A.

. The Relative Inflammability of Coal-dusts. The second report of the Explosions in Mines Committee. Ills. 3000 w. Col Guard—Oct. 11, 1912. Serial. 1st part. No. 36938 A.

The New Coal-Dust Experiments. Information from the first report, giving a full description of the plant, and also a paper by James M. Beattie, on "The Effect Produced on the Lungs by the Inhalation of Coal Dust and Other Dusts." Ills. Plate. 8000 w. Ir & Coal Trds Rev—Aug. 2, 1912. No. 35209 A.

Reports on the French Coaldust Experiments: Fifth Series. J. Taffanel and A. Durr. A review of laboratory tests, the means of ignition consisting of a flame, an electric spark, or a hot surface. 4000 w. Col Guard—Feb. 2, 1912. No. 30400 A.

French Tests on Coal Dust at Liévin (Die französischen Versuche mit Kohlenstaub in Liévin). M. Rybák. Results of tests on the explosive liability of coal dust. Serial. 1st part. 2800 w. Oest Zeitschr f Berg- u Hüttenwesen—Feb. 24, 1912. No. 31328 D.

Experiments at Lievin on the Classification of Coaldust Deposits. J. Taffanel. From the report to the Comité Central des Houillères de France. 1500 w. Col Guard—Sept. 6, 1912. No. 35996 A.

See also Explosions, under *Coal and Coke*, and Explosives, under *Mining*.

Coal Fields

The Smokeless Coal Field of West Virginia. Edwin Ludlow. Discusses legal and business conditions which operate to promote the wasteful exploitation of coal lands. 2000 w. Mines & Min—March, 1912. No. 30967 C.

Extracts from Report on the Brule Lake Coal Claims. James McEvoy. Information concerning the geology, quantity and quality of the coal, method and cost of mining in this Canadian field. 4500 w. Can Min Jour—March 1, 1912. No. 31082.

Industrial Power in Southern Coal. Edward Wheeler Parker. Information concerning the coal resources, present rate of production, etc. 1800 w. Mfrs' Rec—Feb. 22, 1912. (Special.) No. 30742 D.

The Black Mountain Coal District, Kentucky. J. B. Dilworth. Descriptive account of a little-known coal district, its topography, drainage, mineral resources, and geologic features. Map. 8000 w. Bul Am Inst of Min Engrs—Feb., 1912. No. 30887 F.

The Somersetshire and Bristol Coalfield. Reviews the present state of knowledge of this area, giving maps and sections. 3000 w. Col Guard—Nov. 17, 1911. No. 28354 A.

The North-Western Portion of the Somersetshire Coalfield and the Farmborough Fault. Frederick A. Steart. Map and illustrated description of complicated faulting and the coal measures. 4500 w. Col Guard—Nov. 10, 1911. No. 28127 A.

Coal Gas

The Ignition of Coal-Gas and Methane by Momentary Electric Arcs. W. M. Thornton. Abstract of a paper before the Inst. of Min. Engrs. Gives results of investigations. 3500 w. Elect'n, Lond—Oct. 18, 1912. No. 37069 A.

Present State of the German Coal Gas Industry (L'État actuel de l'Industrie du Gaz d'éclairage en Allemagne). W. Bertelsmann. Discussion on German methods of manufacture. Ills. Serial. 1st part. 5400 w. Technique Moderne—Jan. 1, 1912. No. 30608 D.

Air Gas Fuel in the Main Delitzsch Plant (Die Gasluftheizung in der Hauptwerkstatt Delitzsch). E. Krause. Describes the construction of the plant and mode of operation. Ills. Serial. 1st part. 7500 w. Glaser's Annalen—Jan. 15, 1912. No. 30546 D.

Coal Handling

New Lower Lake Port Car Dumping Machines. R. D. Williams. Illustrated description of two installations made by the Erie Ry. at Cleveland, and the B. & O. Ry. at Lorain. 1200 w. Ir Trd Rev—Jan. 4, 1912. No. 29366.

See also Conveyors, under MECHANICAL ENGINEERING, *Transporting and Conveying*.

Coal Lands

Government Policy and Coal Lands. Walter L. Fisher. From a letter by the

Sec. of the Interior to F. W. Mondell of the House Committee on Public Lands, Washington, D. C. Discusses the superiority of the present coal-land policy to the old one. 1800 w. Min & Sci Pr—Aug. 31, 1912. No. 35786.

Coal Legislation

See Legislation, under *Miscellany*.

Coal Miners

See Miner's Baths, under *Mining*.

Coal Mining

Engineering Requirements in Bituminous Coal Mining. William E. Fohl. Shows that this industry requires assistance from every branch of the engineering profession, and calls attention to unsolved problems. General discussion. 20000 w. Pro Engrs' Soc of W Penn—Dec., 1911. No. 29920 D.

Coal Roofs

The Action and Control of Differently Constituted Coal Roofs. W. H. Hepplewhite. Read before the Midland Co.'s Inst. of Engrs. Abstract of paper and discussion. 4500 w. Col Guard—Dec. 22, 1911. No. 29465 A.

Coal Shortage

The Threatened Coal Shortage. Sydney F. Walker. Abstract of a lecture. Discusses the uses of coal, the economies effected, what electricity is doing, etc. 2000 w. Ir & Coal Trds Rev—Dec. 22, 1911. No. 29479 A.

Coal Storage

The Storage of Coal and Spontaneous Combustion. Horace C. Porter. Read before the Pittsburgh section of the Am. Chem. Soc. Discusses losses from weathering and heating. 3500 w. Cassier's Mag—July, 1912. No. 34912 B.

Deterioration and Spontaneous Heating of Coal in Storage. Horace Porter and F. K. Ovitz. Gives results of tests and studies, and offers precautions advised where the use does not involve unreasonable expense. 3000 w. Elec Rev & W Elect'n—Dec. 16, 1911. No. 29016.

Deterioration and Spontaneous Heating of Coal in Storage. Horace C. Porter and F. K. Ovitz. A summary of results thus far obtained by the Bureau of Mines investigations. 4000 w. U S Bureau of Mines—Tech. paper No. 16. No. 33806 N.

Coal Storage

Coal Storage. Edward A. Harman. Abstract of paper read before the Manchester Dist. Inst. of Gas Engrs. Considers briefly methods used, coal stack fires, etc. 2000 w. Ir & Coal Trds Rev—Nov. 10, 1911. No. 28139 A.

A 600-Ton Coal Bin and Tower. Plans, elevation and description of a structure at Haselton, Ohio. 1200 w. Eng Rec—April 20, 1912. No. 32191.

A Submerged Coal Storage Pit at Omaha. Illustrated detailed description of the structural features. 1500 w. Eng Rec—June 15, 1912. No. 33719.

Coal Weathering

The Weathering of Coal Seams. Tom Coventry. Map and description of peculiar conditions in Queensland. 2500 w. Mines & Min—Dec., 1911. No. 28551 C.

Coke Handling

Mechanical Devices for Quenching and Loading Coke. A. Thau. Trans. from *Glückauf*. Illustrates and describes various mechanical devices, the tasks they perform and the difficulties. 3500 w. Ir & Coal Trds Rev—Nov. 10, 1911. No. 28138 A.

Coke-Handling Plant. T. Ashton. Discusses the conveyor in the retort house. Ills. 1200 w. Mech Wld—Nov. 10, 1911. No. 28124 A.

Coke-Oven Gas

The Application of Coke-Oven Gas in the Martin Furnace (Ueber die Verwendung von Koksofengas im Martinsofen). O. Simmersbach. Experiments and tables from studies. Serial. 1st part. 4000 w. Stahl u Eisen—Dec. 7, 1911. No. 29700 D.

Coke Oven Gas in Open Hearth Furnaces. From a paper by Prof. O. Simmersbach in *Stahl und Eisen*. Gives results with mixed gases and with oven gas alone. 3000 w. Ir Age—Feb. 8, 1912. No. 30272 C.

The Separation of Tars From Coke-Oven Gas (Die Abscheidung des Teers aus Koksofen-gasen). H. Krüger. Outlines the several steps of the process. 2500 w. Glückauf—Aug. 17, 1912. No. 36122 D.

See also Nitrogen, under ELECTRICAL ENGINEERING, *Electro-Chemistry*.

Coke Ovens

A Few Points Concerning By-Product Coke Ovens. R. Gillon. Read before the S. Wales and Monmouthshire Br. of the Nat. Assn. of Col. Mgrs. Discusses the conditions to be fulfilled by by-product coke ovens. 3000 w. Ir & Coal Trds Rev—Feb. 23, 1912. No. 31050 A.

The Muller By-Product Coke Oven. Eugene B. Wilson. Illustrated descriptions of the construction and operation of an improved coke oven. 2500 w. Mines & Min—Aug., 1912. No. 34940 C.

The Kros Regenerative Coke Oven. Alfred Gobiet. Sectional views and description. 1000 w. Ir & Coal Trds Rev—Aug. 23, 1912. No. 35763 A.

General Considerations for the Regenerative Coke-Oven Industry (Considérations gênérales sur l'Industrie des Fours a Coke a Régénération de Chaleur). E. Lecocq. General outline of the nature of this industry. Ills. 7000 w. Rev de Metall —Sept., 1912. No. 36188 H.

Coke Plant

The World's Largest By-Product Coke Plant. Illustrated description of the electrical equipment of the Koppers coke oven installation at Gary, Ind. 2500 w. Ir Trd Rev—Dec. 21, 1911. No. 29127.

Coking Plant at Brancepeth Colliery. Illustrated description. Plate. 1200 w. Col Guard—Nov. 24, 1911. No. 28662 A.

Coking

A Laboratory Method for the Comparison of the Coking Properties of Coal. R. Lessing. Read before the Inst. of Gas Engrs. Accounts of experiments. Ills. 3000 w. Col Guard—June 28, 1912. No. 34328 A.

The Coking of Coal at Low Temperatures. An account of experimental work to discover facts pertaining to the properties of bituminous coals, and the possibility of altering the fuel into forms better suited to present-day requirements. Ills. 46 pps. Univ of Ill., Bul. 60—June 8, 1912. No. 36972 N.

Coking Practice in the South Wales District. R. H. Greaves. Read before the British Found. Assn. An account of the production and character of South Wales coke. 3500 w. Mech Engr—Aug. 30, 1912. 35881 A.

Coking By-Products

Notes on the Necessity of Measuring Gas in Connection with By-Product Recovery Ovens. K. Huessener. Shows the importance of measuring the gas output. 1500 w. Ir & Coal Trds Rev, No. 27—Sept. 27, 1912. No. 36740 A.

Application of Coke-Oven Gas in Extracting Nitric Acid from Atmospheric Nitrogen (Ausnutzung der Koksofengase zur Gewinnung von Salpetersäure aus dem Stickstoff der Luft). Q. Dobbelstein. Describes process. Ill. 3000 w. Stahl u Eisen—Sept. 19, 1912. No. 36602 D.

Coke-Oven Tars of the United States. Prevost Hubbard. Gives results of analyses of all the coke-oven tars at present manufactured in the United States, with discussion of their properties in relation to their use as road material. 3000 w. U S Dept of Agri, Circ 97—Feb. 7, 1912. No. 30914 N.

The Manufacture of Benzol in Germany (La Fabrication du Benzol en Allemagne). Eng. Grandmougin. Description of several plants in Germany for the recovery of benzol from coke-oven gas. Ills. Serial. 1st part. 4200 w. Tech Mod—April 1, 1912. No. 32092 D.

The Simon-Carves By-Product Recovery Process. Illustrated description of a plant for the recovery of tar and ammonium sulphate from hot coke-oven gas. 2500 w. Ir & Coal Trds Rev—Jan. 19, 1912. No. 30187 A.

See also Nitrogen, under ELECTRICAL ENGINEERING, *Electro-Chemistry*.

Collieries

Binley Colliery. Illustrated detailed description of this English colliery and its equipment. 3000 w. Ir & Coal Trds Rev —Nov. 24, 1911. No. 28673 A.

See also Mine Plants, under *Mining*.

Colliery Cables

See Cables, under MECHANICAL ENGINEERING, *Transporting and Conveying*.

Colorado

Conditions in the Yampa Coal Field of Colorado. W. Weston. Map and report of the conditions affecting the development and marketing of the coal. 1000 w. Min & Engng Wld—Dec. 16, 1911. No. 29020.

Competition

International Coal Competition. Allan Greenwell. A discussion of international coal trade, giving statistics. 4500 w. Trans Can Min Inst—Vol. XV., Part I. No. 34383 N.

International Coal Competition. Read before the Can. Min. Inst. Reviews statistics of production and distribution. 4000 w. Col Guard—April 17, 1912. No. 32481 N.

Electric Power

Central Station Power in Coal Mines. W. A. Thomas. Discusses the electrification of mines, the problems to be solved, and the applications, installation costs, etc. 5000 w. Pro Am Inst of Elec Engrs —March, 1912. No. 31581 F.

Earthed v. Insulated Neutrals in Colliery Installations. Robert W. Peters. Read before the Assn. of Min. Elec. Engrs. (E. of Scotland Branch). Presents the advantages of each system, and considers how the question affects generating plant and overhead transmission lines. 2000 w. Ir & Coal Trds Rev—April 19, 1912. No. 32460 A.

Electric Power in South-East Kent. An illustrated account of the development of the extensive coal measures recently found, and the electric plant installed. 2500 w. Elec Rev, Lond—Feb. 16, 1912. No. 30786 A.

The Lancashire Electric Power Company's System and Its Application to Lancashire Collieries. Abstract of paper by Charles D. Taite, with discussion before the Manchester Geol. & Min. Soc. Detailed description. 5000 w. Col Guard—March 22, 1912. No. 31727 A.

A New Method of Electric Winding at the Auchincruive Pits of Messrs. William Baird & Co. Illustrated description of an electrical coal-winding plant recently put into operation in Scotland. 2000 w. Ir & Coal Trds Rev—April 5, 1912. No. 32106 A.

See also Hydro-Electric, under ELECTRICAL ENGINEERING, *Generating Stations.*

Explosions

Earthquakes, Strains and Stresses in Relation to Colliery Explosions. F. Napier Denison. Supplementary to an earlier paper, recording additional information. 1200 w. Trans Can Min Inst—Vol. XV. Part I. No. 34381 N.

Explosions in Mines. First report of committee on the inquiry into the causes and means of prevention of coal-dust explosions in mines. Ills. 5000 w. Col Guard—Aug 2, 1912. No. 35197 A.

Gaseous Explosions. Fifth report of the committee appointed for the investigation of gaseous explosions with special reference to temperature. Presented before the British Assn. 5000 w. Mech Engr—Sept. 13, 1912. No. 36256 A.

The Causes and the Prevention of Coal Mine Explosions. Edward K. Judd. The discussion is principally of gas explosions. 3000 w. Sch of Mines Qr—Nov., 1911. No. 29103 D.

The First National Mine-Safety Demonstration. Charles L. Wright. Illustrated study of a real mine explosion. 2000 w. Sci Am—Dec. 2, 1911. No. 28515.

History of Coal-Dust Explosions. Eugene B. Wilson. An abridged account showing the probable causes and suggesting remedies. 11500 w. Mines & Min—July, 1912. No. 34180 C.

Accidents from Explosives in 1911. From the report of H. M. inspectors of explosives for the year 1911. 2500 w. Col Guard—June 28, 1912. No. 34330 A.

Overcasts with Light Walls. A. A. Steel. Illustrates and describes a method of construction that will afford relief for explosive pressure and can be readily repaired. 1000 w. Mines & Min—April, 1912. No. 31737 C.

The Bellevue Explosions, Alberta, Canada. John T. Sterling. An account of, and subsequent investigations concerning, these explosions produced by sparks from falls of roof. 5000 w. Col Guard—Sept. 13, 1912. No. 36262 A.

The Explosion in the Anthracite Coal Mine of the Radbod, 1 and 2, at Hamm (Wesphalia) on the 12th November, 1908 (Die Explosion auf der Steinkohlengrube Radbod I/II bei Hamm i. W. am 12 November, 1908). Herr Hollender. Description of the explosion, its probable cause and effects. Diagrams and plates. Serial. 1st part. 13500 w. Glückauf—Feb. 3, 1912. No. 31329 D.

Bottom Creek Mine Explosion. Explains the conditions at the mine at the time of the explosion. 2200 w. Mines & Min—Jan., 1912. No. 29289 C.

Cross Mountain Mine Explosion. Illustrates and describes this Tennessee mine, its ventilation, the effects of the explosion, and the recovery work. 5500 w. Mines & Min—Feb., 1912. No. 30219 C.

Bruceton, Pa., Explosion. George S. Rice. Map, and description of the explosion test at the Experimental Mine, on Feb. 24, 1912. 2500 w. Mines & Min—May, 1912. No. 32540 C.

Mine Explosion at McCurtain, Okla. A. A. Steel. Report on this disaster explaining conditions and probable cause, and describing the rescue work. Maps. 8000 w. Mines & Min—May, 1912. No. 32539 C.

Report of the Bignall Hill Colliery Explosion. Describes the colliery and the cause of the explosion occurring Nov. 25, 1911, a gas explosion originating from a gob fire, the rescue operations, etc. Map. 7500 w. Col Guard—May 3, 1912. No. 32881 A.

The Jed, W. Va., Mine Explosion. Illustrated account of an explosion due probably to gas, influenced by change of barometer and local conditions. 6000 w. Mines & Min—May, 1912. No. 32537 C.

See also Accidents, under *Coal and Coke*, and Boilers, under MECHANICAL ENGINEERING, *Steam Engineering.*

Explosives

Explosives in Coal Mines. Gives an important new order issued May 21, 1912, regulating the supply, use and storage of explosives. 2500 w. Col Guard—June 14, 1912. No. 33936 A.

Firedamp

The Estimation of Firedamp in Mines. F. K. Cartwright. Abstract of a paper read before the Yorkshire branch of the Nat. Assn. of Col. Mgrs., and of the discussion. Reports experiments leading to such estimation. 4000 w. Col Guard—March 15, 1912. No. 31535 A.

Gas Accumulations

The New Haldane Portable Apparatus for Firedamp Estimations. Illustrated description of an apparatus in which the percentage of firedamp is given by measurement of the contraction on combustion. 1200 w. Col Guard—Sept. 27, 1912. No. 36726 A.

Gas Accumulations

Relieving Accumulations of Gas. W. H. Cunningham, and C. R. Connor. Read before the Min. Inst. of Ky. Explains method of relieving gas pockets by the use of bore holes through which the gas from a lower seam was drawn off. Ills. 2200 w. Mines & Min—Feb., 1912. No. 30222 C.

The Gas Eruption in the Belgian Coalfields During the Years 1892-1908 (Die plötzlichen Gasausbrüche in den belgischen Kohlengruben während der Jahre 1892-1908). W. Schulz. An account of the eruptions with profiles of the geological formation showing probable causes. Ills. Serial. 1st part. 5200 w. Glückauf—Jan. 13, 1912. No. 30514 D.

Gas Coals

Coals Available for the Manufacture of Illuminating Gas. A. H. White and Perry Barker. Gives data and description of investigations made during 1908 and 1909, with results. Ills. 77 pages. Bureau of Mines—Bul 6. No. 29993 N.

See also Coal Gas, under *Coal and Coke.*

Gas Detection

The Use of Mice and Birds for Detecting Carbon Monoxide after Mine Fires and Explosions. George A. Burrell. A report of experimental investigations of methods that can be used with safety in exploring mines containing smoke or gases. 5500 w. U. S. Bureau of Mines—Tech. paper 11. No. 32453 N.

Geological Charts

New Geological and Topographical Outline Maps of the Rhine-Westphalia Bituminous Region (Neue Flöz- und topographische Uebersichtskarten des rechtrheinisch - westfälischen steinkohlenbezirks). L. Mintrop. Discusses the preparation and value of such charts. Maps and Illus. 4400 w. Glückauf—Aug. 10, 1912. No. 36120 D.

Geology

The Geology of Coal. John Sim. Read at a meeting in the Roy. Tech. College, Glasgow. On the origin, the "in situ" and "drift" theories. 5500 w. Ir & Coal Trds Rev—March 8, 1912. No. 31269 A.

The Kent Coalfield, Its Stratigraphic and Tectonic Conditions as Compared with Those of the Westphalian Bituminous Beds (Das Kent-Kohlenfeld, seine stratigraphischen und tektonischen Verhältnisse im Vergleich mit denen des westfälischen Steinkohlengebietes). P. Krusch. Maps and diagrams. 4200 w. Glückauf—July 6, 1912. No. 35507 D.

An Occurrence of Coal Which Bears Evidence of Unusual Conditions Accompanying Its Deposition. Jesse E. Hyde. Illustrated description of an occurrence at Sommerset, Ohio, discussing the probable formation. 5000 w. Jour of Geology—May-June, 1912. No. 33981 E.

Germany

The Development of the Lower Rhine-Westphalian Bituminous Mines in the First and Second Quarters of the Year 1912 (Die Entwicklung der niederrheinisch-westfalischen Steinkohlenzechen im 1. und 2. Vierteljahr 1912). Tables of production compared with similar periods in 1911. 7 Pages. Glückauf—Aug. 10, 1912. No. 36121 D.

Germany's Anthracite Export and Its Significance in the Various Mine Reviews of the Country (Die Steinkohlenausfuhr und ihre Bedeutung für die verschieden Bergbaureviere des Landes). Ernst Jüngst. A study of the coal export trade of the country. 4900 w. Glückauf—June 15, 1912. No. 34508 D.

The Stratifications in the Witten Basin between Heven and Stiepel (Die Lagerungsund Flözverhältnisse in der Wittener Hauptmulde zwischen Heven und Stiepel). Oberste-Brink. Discusses peculiarities of geological formation. Diagrams. 3500 w. Glückauf—March 30, 1912. No. 32031 D.

The Formation of the Finefrau Strata in the Witten Bochum Basins (Die Ausbildung des Leitflözes Finefrau in der Wittener und in der Bochumer Hauptmulde). Herrn Kerksieck and Steinhoff. Report of the geological formation of these regions. Ills. Plate. 3500 w. Glückauf—Jan. 13, 1912. No. 30513 D.

Germany's Coal Production and Export in 1911 (Kohlengewinnung und-aussenhandel Deutschlands im Jahre 1911). Comparative tables of the years 1910 and 1911, showing marked gain. 3500 w. Glückauf—Feb. 10, 1912. No. 31333 D.

Increased Activity in the Rhine-Westphalia Anthracite Coal Fields (Die Betriebserweiterung in rheinisch-westfälischen Steinkohlenbergbau). E. Jüngst. Tabular report of the production of coal in this region. Serial. 1st part. 3500 w. Glückauf—Dec. 23, 1911. No. 29717 D.

Great Britain

The Coal Resources of Great Britain. Dr. G. T. Belby. Report to the British Science Guild on "Natural Sources of Energy." 3000 w. Mech Engr—May 10, 1912. No. 32979 A.

Geological Research in the Coalfields. Information from the Summary of Progress of the Geological Survey for 1911. 4000 w. Col Guard—July 19, 1912. Serial. 1st part. No. 34892 A.

Geological Survey of the Midland Coalfield. Information concerning the Staffordshire and Warwickshire coalfields. 3000 w. Ir & Coal Trds Rev—July 12, 1912. No. 34725 A.

Geological Survey of the Scottish Coalfield. Information from the "Summary of Progress of the Geological Survey of Great Britain." The coalfields were grouped in two districts, and each is described. 4000 w. Ir & Coal Trds Rev—July 12, 1912. No. 34723 A.

India

Coal Mining in India. W. E. Lawrie. Read before the Ipswich and West-Moreton Sci. & Lit. Club. An illustrated account of the industry, and related information. 4500 w. Queens Gov Min Jour—Sept. 14, 1912. No. 36821 B.

The Coal Industry of India. Brief review of its development and causes affecting it. 1500 w. Col Guard—April 12, 1912. No. 32271 A.

Inspection

Coal Mines Inspection—1911. Digest of the reports of H. M. Inspectors of Mines. 49000 w. Col Guard—Aug. 23, 1912. (Sup.) No. 35753 A.

Iowa

The Cost of Mining Coal in Iowa. Edward A. Sayre. Synopsis of a thesis based on the actual cost of mining at the Eagle No. 2 mine, at Des Moines, Iowa. 1200 w. Mines & Min—Nov., 1911. No. 27618 C.

Japan

The Coalmining Industry in the Hokkaido. Extracts from the consular report by H. Wrenacre, giving an account of the development of these resources and the method of mining. 7500 w. Col Guard—Sept. 13, 1912. No. 36263 A.

Japanese Coal-Mining Industry. Information from a recent Consular report concerning the coal-mining industry of the Hokkaido, and the country generally. 1500 w. Ir & Coal Trds Rev—July 19, 1912. No. 34906 A.

Kentucky

Progress in Kentucky Geology. Brief reports on various districts examined and work done in the correlation of coal seams. 1200 w. Mines & Min—June, 1912. No. 33358 C.

Southern Kentucky Coal Field. Describes the geology, the coal beds, mining methods, and surface plant of the Stearns Coal Co. Ills. 2500 w. Mines & Min—Sept., 1912. No. 35692 C.

Labor

See same heading under INDUSTRIAL ECONOMY.

Legislation

Anti-Trust Laws and the Coal Industry. Glenn W. Traer. Explains the effect of the Sherman Act and the Illinois Act on the producers of bituminous coal, preventing them from taking steps for needed protection. 3500 w. Mines & Min—June, 1912. No. 33357 C.

The New Coal Mines Bill. Gives the final text of the measure. 3500 w. Ir & Coal Trds Rev—Dec. 15, 1911. No. 29195 A.

Lookout Mountain

Lookout Mountain Coal Measures. A. W. Evans. Information concerning the structure, quality of the coal, cost of mining, etc. Ills. 1600 w. Mines & Min—June, 1912. No. 33360 C.

Manchuria

The Coal Supply of Manchuria. Edward di Villa. Information concerning the coal deposits and the mines already worked. 800 w. Min & Sci Pr—July 13, 1912. No. 34605.

Mine Fires

Mine Fires; A Preliminary Study. George S. Rice. Discusses the subject in the interest of safer methods in mining, considering underground fires and methods of fighting them and related subjects. 50 pp. U S Bureau of Mines—Tech paper 24. No. 36971 N.

Gob Fires in Mines and Their Prevention. John Harger. Abstract of a paper read before the Manchester Geol. & Min. Soc. Discusses the spontaneous ignition of coal, describes the different kinds of gob fires, and considers their prevention. 1500 w. Ir & Coal Trds Rev—Oct. 11, 1912. No. 36943 A.

Gob Fires in the South Yorkshire Coalfield. W. H. Pickering. Explains methods of working the Barnsley seam, discussing the causes and remedies for gob fires. 2200 w. Col Guard—Jan. 12, 1912. No. 29904 A.

Extinguishing the Majestic Mine Fire. R. Y. Williams. An account of work with rescue apparatus in this Illinois mine. 2500 w. Mines & Min—Jan., 1912. No. 29292 C.

The Giroux Mine Fire. H. H. Sanderson. Gives facts in regard to the occurrence and the methods of recovery after the fire in this Nevada mine. 2000 w. Mines & Min—Feb., 1912. No. 30227 C.

Gas Analysis as an Aid in Fighting Mine Fires. George A. Burrell and Frank M. Seibert. States conclusions based on extensive investigations. 4500 w. U S Bureau of Mines—Tech. paper No. 13. No. 33175 N.

Mine Gases

Mine Gases and a Simple Methane Apparatus. G. A. Burrell. Read before the Coal Min. Inst. of Am. Report of studies made by the Bureau of Mines, with analytical results. 2500 w. Min & Engng Wld—Jan. 6, 1912. No. 29481.

Physiological Effects of Carbon Monoxide. Henry S. Munroe. Information concerning the dangerous nature of this gas. 1600 w. Sch of Mines Qr—July, 1912. No. 34620 D.

Mine Pillars

Why Leave Shaft Pillars? W. H. Pickering and Basil H. Pickering. Read before the Inst. of Min. Engrs. Discusses the effect of crush in coal mining and surface subsidence, the size of shaft pillars, suggestions for opening a seam without having coal shaft pillars, and gives a summary of conclusions. 2500 w. Col Guard—June 7, 1912. No. 33782 A.

Mine Plants

Maltby Main Colliery. Alfred Thompson. Abstract of a paper read before the Midland Inst. of Min., Civil, and Mech. Engrs. Describes surface and underground plant. 2200 w. Ir & Coal Trds Rev—Oct. 11, 1912. No. 36944 A.

A Modern Power Plant. T. Forster Courthope. Illustrated description of the Acadia Coal Co.'s power plant with an outline of the machinery and electrical developments. 2500 w. Can Min Jour—Sept. 15, 1912. No. 36081.

Buckner No. 2 Mine. Warren Roberts and Oscar Cartlidge. Illustrates and describes surface and underground arrangements, showing the more advanced practice in the Illinois coal field. 3000 w. Mines & Min—Oct., 1912. No. 36462 C.

Mine Timbering

Longwall Mining in Illinois. Illustrated description of the plan used in mines of Spring Valley Coal Co., the method of timbering, etc. 2000 w. Mines & Min—March, 1912. No. 30962 C.

Mining Costs

The Increased Cost of Mining Anthracite. W. D. Owens. A comparison of present mining conditions with those existing thirty or more years ago. 1800 w. Mines & Min—Aug., 1912. No. 34942 C.

Nationalization

The Nationalization of Coal Mines. Text of the Bill to nationalize the coal mines and minerals of the United Kingdom, with editorial. 4000 w. Col Guard —Oct. 11, 1912. No. 36939 A.

New Zealand

Coal Mining in New Zealand. Extracts from the report of the Royal Commission appointed to investigate safety and health in mining. 2500 w. Col Guard—June 28, 1912. Serial. 1st part. No. 34329 A.

Nova Scotia

Coal Mines of Nova Scotia Steel and Coal Company. Map and history, with illustrated description of No. 4 Colliery, the plant and operating methods. 5000 w. Can Min Jour—Sept. 15, 1912. No. 36083.

The Dominion Coal Company, Limited. F. W. Gray. A summary showing the present standing of the enterprise. Ills. 3000 w. Can Min Jour—Sept. 15, 1912. No. 36080.

Conservation of Nova Scotian Coal Fields. Neil A. Nicholson. Discusses past and present methods of coal mining, especially in Nova Scotia. 3500 w. Can Min Jour—Oct. 1, 1912. No. 36564.

Coal-Mining in Nova Scotia in 1911. Reports production and distribution during the fiscal year. 900 w. Col. Guard—April 17, 1912. (Special.) No. 22480 N.

Peat

Is Peat an Important Fuel in the U. S.? Charles A. Davis. Abstract of a paper read before the Am. Chem. Soc. Map, and estimation of the peat beds and their value. 2500 w. Dec. 10, 1911. No. 29029.

The Uses of Peat for Fuel and Other Purposes. Charles A. Davis. Gives results of investigation to determine whether peat could be made available in the United States. 214 pages. Map. U S Bureau of Mines—Bul 16. No. 29985 N.

Canadian Peat Fuel Industry. A report of the industry and description of the fuel testing station at Ottawa, and its work. 2000 w. Can Engr—Nov. 30, 1911. No. 28582.

Peat in Agriculture. Paul H. Todd. Considers operations on which the cultivation of peat-lands depend. 3500 w. Jour Am Peat Soc—Jan., 1912. No. 32351 H.

The Recent Development of Peat as a Power Factor. T. A. Mighill. Reviews what has been accomplished in the use of peat for power purposes. 3000 w. Jour Am Peat Soc—Jan., 1912. No. 32350 H.

Commercial Utilization of Peat for Power Purposes. H. V. Pegg. A report of experiments made. 1800 w. Inst of Mech Engrs—July, 1912. No. 35205 N.

Peat Briquetting. G. J. Mashek. Read before the Am Peat Soc. Explains a proposed method for utilization of peat for fuel, commenting on the difference between the past success in Europe and America. 3500 w. Chem Engr—Sept., 1912. No. 36233 C.

See also Gas Producers, and Peat Power, under MECHANICAL ENGINEERING, *Combustion Motors*, and Fuels, under MECHANICAL ENGINEERING, *Steam Engineering*.

Peat Machine

Dr. Willandt's Peat Machine. Illustrated description of an automatic peat digging machine. 1400 w. Jour Am Peat Soc—Jan., 1912. No. 32349 H.

Philippines

Chemical and Physical Characteristics of Philippine Coal. Alvin J. Cox. Gives analyses and calorific values, samples of coal, made by the Bureau of Science, with tests. 4500 w. Philippine Jour of Sci—Feb., 1912. No. 35328 N.

Planes

A New Type of Gravity Plane. J. J. Smith. Describes types of self-acting planes, explaining details of a double-track incline and its operation. Ills. 7500 w. Eng & Min Jour—April 13, 1912. No. 31960.

Winding Engines of the Ashley Planes. Warren O. Rogers. Illustrated description of the new engines which haul freight cars up three planes near Wilkes-Barre, Pa., and of the planes. 1500 w. Power—April 2, 1912. No. 31708.

Production

Output and Value of Coal in 1910. Information from the General Report and Statistics relating to Mines and Quarries for 1910, by R. A. S. Redmayne, in regard to England, Scotland, Ireland, and Wales. 2500 w. Power—Dec. 19, 1911. No. 29029. 29181 A.

World's Production and Consumption. Information from the Returns by the Board of Trade. 2500 w. Ir & Coal Trds Rev—Dec. 29, 1911. No. 29628 A.

Rescue Methods

Lessons from Recent Mine Disasters. From an address by Dr. Joseph A. Holmes at Knoxville, Tenn. Considers precautions against fires and explosions, and the importance of trained rescue men. 4500 w. Mines & Min—April, 1912. No. 31739 C.

The New Diving Apparatus "Westphalia." (Die neuen Taucherāte "Westphalia"). Herr Grahm. Suit and oxygen chambers devised for use in diving or mine-rescue work. Ills. 1800 w. Glückauf—Sept. 7, 1912. No. 36605 D.

See also Rescue Work, under *Mining*.

Reviews of 1911

The Coal Trade of 1911. Reviews by districts the coal trade of the United Kingdom. Also map of coalfields. Map. 30000 w. Col Guard—Jan. 5, 1912. Serial. 1st part. No. 29674 A.

The Coal, Iron and Allied Trades in 1911. General review by districts. 26500 w. Ir & Coal Trds Rev—Dec. 29, 1911. No. 29627 A.

The Coal Trade of Nova Scotia During 1911. F. W. Gray. A résumé. Ills. 4000 w. Can Min Jour—Jan. 15, 1912. No. 29826.

Coal Mining in the United States in 1911. General review of the anthracite and softer coals, and a report by districts. Also review of foreign operations. 7000 w. Min & Engng Wld—Jan. 27, 1912. (Special.) No. 30080 C.

Safety Devices

Safety Devices in Connection with Electrical Machinery and Apparatus for Coal Mines. David Bowen and Walter E. French. From a paper read before the Inst. of Min. Engrs. Discusses features in connection with the safe application of electricity in coal mines. 3500 w. Col Guard—June 7, 1912. Serial. 1st part. No. 33784 A.

Safety Lamps

A New Portable Electric Safety Lamp. Illustrates and describes the Pape safety lamps. 1000 w. Col Guard—Jan. 12, 1912. No. 29902 A.

Sampling

Coal Sampling. C. E. Stromeyer. From the *Mem.* of the chief engineer to the Manchester Steam Users' Assn., 1910. Summary of conclusions as to the size of samples. 1500 w. Col Guard—Dec. 8, 1911. No. 29051 A.

Saskatchewan

Saskatchewan Fuels and Gas. R. O. Wynne-Roberts. Read before the Regina Soc. of Arts & Sciences. Gives information concerning the quantity and quality of available fuel. 3000 w. Can Engr—March 21, 1912. No. 31474.

Scranton, Pa.

Mining Conditions Under the City of Scranton, Pa. Report and maps by William Griffith and Eli T. Conner, with a preface by Joseph A. Holmes and a chapter by N. H. Darton. Ills. 89 pages. U S Bureau of Mines—Bul. 25. No. 33159 N.

Spitzbergen

Coal and Coal-Mining in Spitsbergen. A. Udhaug. Illustrated account of these islands north of Norway, and a discussion of the coal-producing prospects. 1800 w. Ir & Coal Trds Rev—June 28, 1912. No. 34340 A.

Spontaneous Combustion

The Spontaneous Combustion of Coal. Reviews a recent report submitted to Lloyds Register containing interesting facts and data bearing upon the subject. 2500 w. Mech Engr—Oct. 4, 1912. No. 36842 A.

See also Coal Storage, under *Coal and Coke.*

Stockheim

The Genesis of the Coal Deposit at Stockheim (Ueber die Genesis des Stockheimer Steinkohlenflözes). Dr. P. Krusch. A study of the geological formation of the region. 8200 w. Maps. Glückauf—Oct. 14, 1911. No. 28427 D.

Texas

Texas Coals and Lignites and Their Composition. W. D. Hornaday. Gives information obtained in a recent investigation made by Dr. William B. Phillips and S. H. Worrell. 1800 w. Min & Engng Wld—Nov. 11, 1911. No. 27987.

Tipples

Model Steel Tipple at Annabelle Mines. William Archie Weldin. Illustrates and describes an example of the newest methods in building construction and in the methods of handling coal. 6000 w. Mines & Min—Jan., 1912. No. 29288 C.

Trade

Fuel Problems of the Pacific. H. Foster Bain. A statement of conditions and discussion of the outlook for the coal trade after the opening of the Panama Canal. 5000 w. Trans Can Min Inst—Vol. XV. Part I. No. 34384 N.

Influence of Panama Canal Upon Coal Trade. H. Foster Bain. Read before the Can. Min. Inst. Discusses the effect on fuel distribution on the new trade alignment expected to follow the opening of the canal. 2500 w. Col Guard—April 19, 1912. No. 32482 A.

Wages and Profits in the Coal Trade. Critical review of statements in a pamphlet entitled "Profits and Wages in the British Coal Trade" (1898-1910), by Thomas Richardson and John A. Walbank. 2000 w. Engr, Lond—Feb. 9, 1912. No. 30674 A.

Transvaal

Coal Mining in the Transvaal. J. F. Kellock Brown. Read before the Scottish Fed. Inst. of Min. Students. Information concerning the coalfields and their development, the general social conditions and working in the mines. 3000 w. Ir & Coal Trds Rev—Jan. 5, 1912. No. 29684 A.

United States

Coal Resources of the United States. Edward W. Parker. Map and discussion of the coal areas. 1500 w. Trans Can Min Inst—Vol. XV. Part I. No. 34382 N.

Ventilation

The Direct Driving of Mining Plant by Internal-Combustion Engines. A. Vennell Coster. Discusses especially the direct driving of colliery fans. Ills. 3000 w. Cassier's Mag—July, 1912. No. 34910 B.

Modern Ventilating Machines. W. Charlton. Read before the S. Staff. and Warwickshire Inst. of Min. Engrs. Illustrates and describes changes introduced in colliery fans, describing modern types. Discussion. 5000 w. Ir & Coal Trds Rev—June 21, 1912. No. 34228 A.

Moistening Mine Ventilating Currents. A. A. Steel. Discusses the use of steam jets and water sprays, and methods of avoiding fog and undue dampness. 3000 w. Mines & Min—Oct., 1912. No. 36464 C.

Further Notes on the Analyses of Mine Air Conducted at the Lewis Merthyr Consolidated Collieries, Limited, Trehafod. J. W. Hutchinson and Edgar G. Evans. Read before the S. Wales Inst. of Engrs. Report of investigations and results. 2000 w. Col Guard—Sept. 20, 1912. No. 36491 A.

Washing

Standardization in Coal Washing. George R. Delamater. A plea for uniformity in tests and reports, giving formulae for comparison of washery work. 5000 w. Mines & Min—March, 1912. No. 30966 C.

Modern Coal Washing Practice (Moderne Kohlenschlammgewinnung). Th.

Möhrle. Description of some of the apparatus employed in the washing and sorting of coal. Ills. Serial. 1st part. 1000 w. Oest Zeit f Berg u Hutten—June 22, 1912. No. 34503 D.

The Technical Problems of Coal Preparation. W. S. Ayres. Read before the Int. Cong. of Ap. Chem. Discusses methods of keeping waste by attrition down to a minimum. 2800 w. Sci Am Sup—Sept. 28, 1912. No. 36384.

Coal Washing (La Lavabilité des charbons). M. Hanappe. Comparisons between washed and unwashed coal. Diagrams. 3500 w. Alliance Industrielle—Jan., 1912. No. 30604 D.

Waste Washing Practice at Home and Abroad (Das Spülversatzverfahren im In- und Ausland). Dr.-Ing. Pütz. Reviews German and American practice. Ills. Serial. 1st part. 5200 w. Glückauf—Aug. 24, 1912. No. 36124 D.

Experimental Coal-Washing Plant at McGill University. From a report by Dr. J. B. Porter on Canadian coals. Describes washing tests and the McGill plant, and discusses the subject of coal-washing generally. Ills. 2000 w. Col Guard—May 17, 1912. No. 33270 A.

Developments at Cortonwood Colliery. Illustrated description of the Humboldt coal-washing plant and arrangement of coke ovens at this colliery. Plate. 1500 w. Ir & Coal Trds Rev—May 24, 1912. No. 33469 A.

Coal-Washing Plant at the Cramlington Colliery. Illustrated detailed description. Plate. 1000 w. Engr, Lond—Dec. 22, 1911. No. 29476 A.

"Dortmund" Washery at the Holbrook Colliery. Illustrated detailed description. Plate. 2000 w. Ir & Coal Trds Rev—July 5, 1912. No. 34478 A.

See also Washing, under *Ore Dressing and Concentration.*

West Virginia

Mining on Loup Creek, W. Va. J. J. Marshall. Describes methods employed in the removal of coal from the No. 2 gas seam in the Kenawha district. Ills. 3000 w. Mines & Min—Aug., 1912. No. 34941 C.

COPPER

Arizona

The Miami District, Arizona. W. R. Ingalls. Illustrated account of four important mines on the great deposit of disseminated copper ore. 3000 w. Eng & Min Jour—Jan. 13, 1912. No. 29577.

Geology of the Miami Copper Mine. M. H. Loveman. Describes the rock types and orebodies. Ills. 2000 w. Min & Sci Pr—Aug. 3, 1912. No. 35083.

Mines of the Globe Miami District. F. C. Calkins. A report of these copper mines of Arizona, which are producing at the rate of nearly 60,000,000 lbs. per year. 2500 w. Min & Sci Pr—Aug. 24, 1912. No. 35602.

Notes on the Miami Copper District, Arizona. Walter Harvey Weed. Notes on the economic peculiarities of this district. 2500 w. Min & Engng Wld—May 18, 1912. No. 32954.

Work of the Ray Consolidated. D. C. Jackling. Information from the annual report for period ending Dec. 31, 1911. Describes this copper property, recent improvements and development. Ills. 3000 w. Min & Sci Pr—May 15, 1912. No. 33060.

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Assaying

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Australia

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See also same heading, under *Gold and Silver.*

Bolivia

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Chile

The Braden Copper Company. Pope Yeatman. An account of low-grade copper deposits in the eruptive rocks of the Andes, in Chile, the development, the mining methods and other information. Maps. 4500 w. Eng & Min Jour—Dec. 9, 1911. Serial. 1st part. No. 28698.

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Miami Concentrating Mill. C. E. Golding. Illustrated description of a successful mill in Arizona, of 4,000 tons daily capacity, working the low-grade copper ore. 2500 w. Mines & Min—April, 1912. No. 31741 C.

Desulphurizing

Efficiency in Ore Roasting. Arthur S. Dwight. A study of the relative efficiencies of some of the more important desulphurizing methods used in the metallurgy of lead and copper, to prepare the ore for smelting. 6000 w. Sch of Mines Qr—Nov., 1911. No. 29099 D.

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Copper and Its Alloys in Early Times. Prof. William Gowland. Abridged from the Presidential address to the Inst. of Metals. A description of primitive methods of extraction and metal working. Ills. 6000 w. Nature—March 28, 1912. No. 31872 A.

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Review of Lake Superior Copper Mining in 1911. Robert H. Maurer. Information concerning the various companies. Map. 3000 w. Min & Sci Pr—Jan. 13, 1912. No. 29699.

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Mexico

See same heading, under *Gold and Silver*.

Michigan

The Copper-Mining Industry of Michigan. Redinald E. Hore. Illustrated review of these copper mines and their development. 2500 w. Min & Engng Wld—March 16, 1912. Serial. 1st part. No. 31230.

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Conditions of Mineralization in the Copper Veins at Butte, Montana. Charles T. Kirk. 16000 w. Ec Geol—Jan., 1912. No. 31192 D.

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Work of the Nevada Consolidated Copper Company. Pope Yeatman. From a report covering fifteen months ending Dec. 31, 1911, showing results. 2200 w. Min & Sci Pr—May 4, 1912. No. 32677.

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Work of the Chino Copper Company. D. C. Jackling. Information from the annual report for the period ending Dec. 31, 1911, concerning the development and improvement at the mine, operations, etc. Ills. 2200 w. Min & Sci Pr—May 25, 1912. No. 33300.

Milling the Ore of the Chino Mine. John M. Sully. Describes the power plant and buildings of this copper mine, and the milling methods which it employs. Ills. 2200 w. Min & Sci Pr—March 30, 1912. No. 31809.

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Ore Deposits

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Porphyritic Copper

Types of Porphyry Copper Deposits. W. L. Tovote. Discusses the genesis of these deposits, their more important characteristics, etc. 2000 w. Min & Sci Pr—May 18, 1912. No. 33057.

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Precipitation of Copper From Mine Waters. Floyd Bushnell. Reviews the history of the making of copper through the employment of mine water. Ills. 1500 w. Min & Sci Pr—Nov. 18, 1911. No. 28260.

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The Sources of the World's Copper Supplies in 1912, and the Influence of Output Upon Price. John B. C. Kershaw. Gives the comparative production of various countries. 2000 w. Cassier's Mag—Sept., 1912. No. 36694 B.

Some Observations in Butte, Mont. W. R. Ingalls. Considers that these copper mines will maintain their present production for 20 years, and that the cost will be reduced to 9c. per pound. 1800 w. Eng & Min Jour—March 16, 1912. No. 31205.

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The Copper Deposits of Eastern Quebec. John E. Hardman. Reviews the history of the industry, describing the deposits and showing that large capital is required to make their development profitable. 2000 w. Can Min Jour—July 1, 1912. No. 34270.

Refining

The Refining of Blister-Copper. Horace H. Emrich. Part I. discusses a partial refining in the anode furnace; and Part II. considers electrolytic refining. General discussion. 8000 w. Bul Am Inst of Min Engrs—June, 1912. No. 34050 F.

Reviews of 1911

The Copper Trade in 1911. L. M. Atherton. Reviews the output, developments, and outlook. 1500 w. Ir Age—Jan. 4, 1912. (Special.) No. 29333 D.

The Metallurgy of Copper in 1911. Arthur L. Walker. Reviews new works and processes. 3500 w. Eng & Min Jour—Jan. 6, 1912. No. 29426.

Metallurgy of Copper During 1911. Thomas T. Read. Review of progress during the year. 4000 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29560 C.

The Copper Industry in 1911. Gives the production, review by states, markets, etc., with district reports by different writers. 8500 w. Eng & Min Jour—Jan. 6, 1912. No. 29418.

The World's Copper-Mining Industry in 1911. Review of production and prices. 2500 w. Min & Engng Wld—Jan. 27, 1912. (Special.) No. 30078 C.

Rolling Mills

The Manufacture of Brass and Copper at the Plants of Basse & Selve, Altena, I. W., Germany. Illustrated description of these extensive works which have celebrated their fiftieth anniversary, and review of their history. 2000 w. Brass Wld—May, 1912. No. 33032.

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An American Copper Plant in the Caucasus. An account of a low-grade copper property at Dzansul, Russia. 2000 w. Min & Engng Wld—May 18, 1912. No. 32956.

Russia Copper Production. Reviews the development of the industry and production. 1500 w. Min Jour—April 20, 1912. Serial. 1st part. No. 32489 A.

Sampling

The Mathematics of Copper Sampling. Edward Keller. Discusses the interior structure of copper bars, and explains a method of sampling by which each separate hole can be made to represent the average of the bar in which it is placed. 2500 w. Eng & Min Jour—April 6, 1912. No. 31828.

Smelting

Thiogen Process Demonstration. L. H. Eddy. Illustrated description of a small plant at Campo Seco, Cal., for reducing the sulphur oxides in furnace gases to elemental sulphur. 1000 w. Eng & Min Jour—May 4, 1912. No. 32589.

Notes on the "Best Selected" Process in the Metallurgy of Copper, and an Application of the Bessemer Converter Thereto. Norman Reid. 1000 w. Inst of Civ Engrs—No. 3919. No. 29961 N.

Problems in Modern Copper Smelting. S. E. Bretherton. Address before the Min. Assn. of Univ. of Calf. Outlines the principles of copper matte smelting and converting. Ills. 3800 w. Min & Sci Pr—Feb. 10, 1912. No. 30431.

Copper Smelting at the Kennett Plant, California. C. A. Tupper. History and recent developments of interest. Ills. 2000 w. Min & Engng Wld—Feb. 10, 1912. No. 30364.

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Recent Improvements and Additions to the Smelting Plant of the Canadian Copper Co. David H. Browne. An account of the change from acid converters to basic converters. 2500 w. Qr Bul Can Min Inst, No. 18—Feb., 1912. No. 31440 N.

Handling Furnace Charges at Cananea. Morris Jesup Elsing. Illustrated description of methods used at the smelting plant of the Greene-Cananea Copper Co. 1600 w. Min & Sci Pr—May 4, 1912. No. 32674.

The Mason Valley Copper Smelter. Thomas T. Read. Illustrated description of this plant at Thompson, Nevada, and its operation. 2500 w. Min & Sci Pr—Aug. 31, 1912. No. 35785.

Southern States

The Copper, Lead, and Zinc Industries of the Southern States. C. E. Siebenthal. Information concerning the mines, production, and the different deposits worked. 5000 w. Mfrs' Rec—Feb. 22, 1912. No. 30748 D.

Ural Mountains

Copper Mines in the Urals. E. de Hautpick. A general account of the mines and their development. 1800 w. Min Jour—July 6, 1912. No. 34463 A.

Copper Mines of the Ural Region. H. W. Turner. Describes the mines of this region, which have been worked for 170 years. Ills. 3500 w. Min Mag—June, 1912. No. 33994 B.

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Work of the Utah Copper Company. D. C. Jackling. From a report to the company for the year ending Dec. 31, 1911, giving information of development, operations, etc. 4000 w. Min & Sci Pr—May 11, 1912. No. 32906.

See also same heading, under *Gold and Silver*.

GOLD AND SILVER

Alaska

Gold Deposits of the Sitka, Alaska, District. Adolph Knopf. Abstract from Bull. 504, U. S. Geol. Surv. Describes the geology of the region, structural features of the orebodies, the mining properties, etc. 4000 w. Min & Sci Pr—March 2, 1912. No. 31063.

The Valdez Gold-Mining District, Alaska. L. W. Storm. Illustrated description of this district and its development. 3300 w. Min & Engng Wld—March 23, 1912. No. 31503.

Gold Deposits of the Valdez District, Alaska. Alfred H. Brooks. Describes the ore deposits, their distribution, conditions of mineralization, etc. Map. 2500 w. Min & Engng Wld—Sept. 7, 1912. No. 35844.

Alloys

Volatilization of Gold and Silver from Their Copper Alloys. Edward F. Kern and Albert A. Heimrod. An account of investigations made to determine whether gold and silver are volatilized when alloys of these metals with copper are subjected to temperatures above their melting point, in a reducing atmosphere. Ills. 8500 w. Sch of Mines Qr—Nov., 1911. No. 29102 D.

The Solubility of Nitric Acid of Gold Contained in Certain Copper-Alloys (Copper Bullions). Edward Keller. Considers the chemical composition of auriferous copper-bullions, describing their treatment in sampling and assaying and discussing experiments and theories. 3500 w. Bul Am Inst of Min Engrs—July, 1912. No. 34846 F.

Alluvial Gold

Alluvial Gold Deposits in Quebec. Fritz Cirkel. Describes deposits known since 1835, and their recent exploration. Ills. 3000 w. Eng & Min Jour—Nov. 25, 1911. No. 28302.

Amalgamation

Amalgamation Tables for Huntington Mills. Drawings and description. 700 w. Eng & Min Jour—June 1, 1912. No. 33346.

Analysis

Methods for a Complete Precipitation of Gold (Behelfe zur vollständigen Fällung des Goldes). E. Priwoznik. A brief discussion of methods suggested by various chemists. 2000 w. Oest Zeit f Berg- u Hüttenwesen—Nov. 25, 1911. No. 28874 D.

Arizona

The La Fortuna Mine. F. J. Martin. An account of the discovery and early development of this Arizona property. 1500 w. Min & Sci Pr—July 6, 1912. No. 34352.

See also Placers, under *Gold and Silver*.

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United States Assay Offices; Methods of Operation. Describes methods used. 2800 w. Min & Engng Wld—Feb. 24, 1912. No. 30772.

Method for Assaying Zinc-Box Precipitate. Harai R. Layng. From *Trans. of Am. Met. Soc.* Describes the method used. 1800 w. Min & Engng Wld—March 23, 1912. No. 31504.

Presenting Assay Results by Graphic Methods. J. B. Stewart. Explains a scheme for graphically representing the commercial value of the ore in a mine by combining the factors of available tonnage and the assay value per ton. 3000 w. Min & Sci Pr—May 11, 1912. No. 32904.

Australia

Distribution of Gold in Australia. Gerard W. Williams. A review and a forecast. 5000 w. Aust Min Stand—Nov. 23, 1911. Serial. 1st part. No. 29601 B.

The Great Cobar, Limited. Donald Clark. Describes the topography, geological features, ore occurrences, etc., of these gold and copper mines and the works. 3800 w. Aust Min Stand—Oct. 12, 1911. Serial. 1st part. No. 28008 B.

Metallurgy at Bendigo. M. W. von Bernewitz. An account of methods and conditions in this famous gold mining district of Australia. Ills. 2800 w. Min & Sci Pr—Aug. 17, 1912. No. 35380.

Early Days at Kalgoorlie. H. E. West. An interesting account of early conditions, about 1895. Ills. 2500 w. Min Mag—June, 1912. No. 33992 B.

Austria

Gold Mining in Nagy-Bánya (Der Goldbergbau in Nagybánya). Viktor Hanisch. Reviews production in the various districts. 2800 w. Zeit d Oest Ing u Arch Ver—Aug. 9, 1912. No. 36166 D.

British Columbia

The Origin of the Silver-Lead Deposits of East-Kootenay, British Columbia. S. J. Schofield. Discusses the origin of these ores and compares them with the similar deposits in Idaho. 2500 w. Ec-Geol—June, 1912. No. 34021 D.

Bullion Sampling

The Sampling of Gold-Bullion. Frederic P. Dewey. Reports investigations of various methods of sampling, stating conclusions. 5000 w. Bul Am Inst of Min Engrs—Oct., 1912. No. 37126 F.

California

The High Grade Mining District. William H. Storms. Describes this district and reviews its history, describing properties being developed. Ills. 3500 w. Min & Sci Pr—Aug. 31, 1912. No. 35787.

Possibilities of the Mother Lode in Depth. William H. Storms. Reviews the profitable mines of the Mother Lode and discusses the prospects of the undeveloped properties of this goldfield. 4000 w. Min & Sci Pr—Nov. 18, 1911. No. 28259.

Possibilities of the Mother Lode in Depth. W. H. Storms. Presents facts and conclusions concerning these mines. Map and Ills. 4500 w. Min & Sci Pr—Oct. 12, 1912. No. 36858.

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The Seneca Mining District, California. F. L. Wilson. Map and illustrated description of this gold district. 1500 w. Min & Sci Pr—Nov. 25, 1911. No. 28581.

Gold-Production in California. Charles G. Yale. Information concerning past production and the present condition of the gold-mining industry in the state. 1600 w. Bul Am Inst of Min Engrs—March, 1912. No. 31586 F.

The Los Burros Mining District. Charles H. Davis. Describes these gold mines, the conditions affecting mining, the development and production. Map. 2500 w. Min & Sci Pr—May 18, 1912. No. 33061.

Forbestown District, California. Lewis H. Eddy. An account of a gold and silver district which produced for 18 years and was then abandoned for various reasons. 4000 w. Eng & Min Jour—July 27, 1912. No. 34814.

See also Dredging, under *Gold and Silver.*

Canada

The Silver Fields of Nipissing. Reginald E. Hore. Illustrated description of a portion of this region, its rocks, ores, etc., discussing the origin of the silver deposits, their development, reduction, etc. 8500 w. Qr Bul of Can Min Inst—Dec., 1911. No. 30887 N.

Chile

Gold Discovery at Putú, Chile. An illustrated account of the discovery of rich deposits. 600 w. Eng & Min Jour—Dec. 2, 1911. No. 28560.

Cobalt

What Cobalt Silver Mines Have Done. Alex. Gray. Reviews the records of companies in Cobalt for the year 1911. 5000 w. Min Jour—Jan. 20, 1912. No. 30159 A.

Recent Underground Development Work at Cobalt. Cyril W. Knight. A brief summary of certain recent underground developments, with maps. 2000 w. Qr Bul Can Min Inst, No. 18—Feb., 1912. No. 31439 N.

Buffalo Mine and Mill, Cobalt. W. J. Dobbins and H. G. S. Anderson. Illustrates and describes these silver deposits and the method of mining and milling. 5500 w. Eng & Min Jour—Aug. 3, 1912. No. 35057.

Power Development in Cobalt. G. C. Bateman. Illustrated description of the water development to furnish power for the silver mines. 1200 w. Can Engr—June 20, 1912. No. 33905.

Colombia

Gold-Mines in Southern Colombia. Fortunato Pereira Gamba. Maps and description of the deposits, mines, etc. 3500 w. Bul Am Inst of Min Engrs—Aug., 1912. No. 35370 F.

El Porvenir Mine in the District of Mallama. F. P. Gamba. Map with description of the ore deposits as found therein. 1800 w. Min & Sci Pr—July 13, 1912. No. 34602.

See also Placers, under *Gold and Silver.*

Colorado

Geology and Ore Deposits of Creede, Colorado. W. H. Emmons and E. S. Larsen. From report in Bull. 503-E, U. S. Geol. Surv. Describes the mining and treatment of the ore, the geology, ore deposits, etc. 3500 w. Min & Sci Pr—Sept. 14, 1912. No. 36032.

Two Famous Mines. T. A. Rickard. Gives the story of Stratton's Independence Ltd., and Camp Bird Ltd. Ills. 2500 w. Min & Sci Pr—Dec. 16, 1911. Serial. 1st part. No. 29128.

Revival of Mining at Red Cliff. A. J. Hoskin. An illustrated account of the successful operation of old mines in Colorado, abandoned on reaching sulphide ores. 4500 w. Mines & Min—Oct., 1912. No. 36465 C.

Cupellation

Cupellation of Gold Precipitate. Cecil J. Brooks. A short description of the process in use at Bau, Borneo, preparatory to refining the bullion by cupellation. Drawings. 2200 w. Min Mag—March, 1912. No. 31641 B.

Cyanide Meters

Solution Meter for Use in Cyanide Plants. James Spiers. Trans. Am. Met. Soc. Describes the Worthington liquid weigher, used generally for measuring water, but also for oil and other liquids. Describes its adaptation for use in cyanide plants in the determination of solutions. 1000 w. Min & Engng Wld—June 1, 1912. No. 33397.

Cyanide Plants

Chispas Cyanide Plant, Arizpe, Sonora, Mexico. Edward L. Dufourcq. Outlines the construction and detail of the cyanide plant in the present paper. Ills. 5500 w. Sch of Mines Qr—Nov.,.1911. No. 29100 D.

The Cyanide-Plant at the Treadwell Mines, Alaska. W. P. Lass. Illustrated description of the plant and method of cyaniding, giving results of experimental work. 7500 w. Bul Am Inst of Min Engrs—Feb., 1912. No. 30839 F.

Cyaniding at Nova Scotia Mill. C. L. Hargrave. Brief review of troublesome features of cyanidation, with suggestions for remedies. 2000 w. Eng & Min Jour—June 8, 1912. No. 33615.

Iola Cyanide Mill, Candor, N. C. Percy E. Barbour. Illustrated description, with history. 3500 w. Eng & Min Jour—Sept. 14, 1912. No. 35945.

Cyanide Records

Cyanide Mill Metallurgical Records. E. H. Webster. Gives forms for recording the data, and suggestions as to methods of obtaining the information. 2500 w. Eng & Min Jour—April 20, 1912. No. 32223.

Cyaniding

Progress in Cyanidation of Gold and Silver Ores During 1911. Alfred James. A review of the year's progress, the new mills, new processes, etc. Ills. 7500 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29564 C.

Cyanidation in 1911. Burr A. Robinson. Briefly considers the treatment of refractory ores, slime agitation, and filtration, precipitation, etc. 2500 w. Eng & Min Jour—Jan. 6, 1912. No. 29425.

Premature Precipitation of Gold in Cyanidation. R. Stuart Browne. A discussion aiming to throw some light on this subject. 4500 w. Min & Engng Wld—Dec. 2, 1911. No. 28575.

Tendencies in Cyanidation. A. W. Allen. On the advantages gained by the adoption of the continuous method. 1000 w. Min Mag—Jan., 1912. No. 29987 B.

The Assay of Gold-Bearing Cyanide Solutions by Electrolysis. C. Crichton. Brief description of the method and results. 1500 w. Jour Chem, Met, & Min Soc of S Africa—Sept., 1911. No. 28339 E.

Cyaniding of Concentrate. E. M. Hamilton. Discusses aspects of the subject drawn from the experience of the writer. 5000 w. Eng & Min Jour—April 27, 1912. No. 32397.

Cyaniding Weathered Pyritic Tailing. Herbert R. Edmands. Describes methods by which an extraction of 88 per cent were obtained. 2500 w. Eng & Min Jour—March 23, 1912. No. 31477.

Cyaniding Tailings in Colombia. Ralph W. Perry. Illustrated description of methods and costs of construction, and operation of three small temporary plants. 2000 w. Eng & Min Jour—March 9, 1912. No. 31105.

Rapid Estimation of Available Calcium Oxide in Lime Used in the Cyanide Process. Luthur W. Bahney. Gives details of the oxalic acid method for rapid valuation. 1500 w. Bul Am Inst of Min Engrs—Nov., 1911. No. 28190 F.

Cyaniding by Continuous Decantation in Clear County, Colorado. H. C. Parmelee. An account of the work of the Hudson Reduction Co., Idaho Springs, Colo., in treating successfully the varied ores of the district. 3500 w. Met & Chem Engng—Jan., 1912. No. 29309 C.

Metallurgy of Mercer Gold Ores. Theo. P. Holt. Describes methods used at the first mill in America to successfully use the cyanide process. Ills. 2000 w. Mines & Min—Jan., 1912. No. 29294 C.

Progress of Cyano-Metallurgy in 1911. The present number reviews stamp milling and regrinding practice, the tendency to favor stage crushing, etc. 3500 w. Min & Engng Wld—Feb. 3, 1912. Serial. 1st part. No. 30245.

Electrolytic Oxygen in Cyanide Solutions. T. H. Aldrich, Jr. Describes experiments, and a process of decomposing water by the electric current to furnish oxygen to dissolve silver or gold in cyanide. 1200 w. Bul Am Inst of Min Engrs—Feb., 1912. No. 30838 F.

The Action of Mineral Sulphates and Arsenates on Cyanide Solutions. Andrew F. Crosse. Report of experimental study and results. 2000 w. Jour Chem, Met & Min Soc of S Africa—April, 1912. No. 33764 E.

Laboratory Test on Cyanide Ore. Linderfelt and Stewart. Explains method used to determine the suitability of the ore to treatment by the cyanide process. 1500 w. Mines & Min—June, 1912. No. 33362 C.

The Parks Electro-Cyanide Process. John R. Parks. Describes the process and reports concerning its efficiency. Ills. 2500 w. Sch of Mines Qr—July, 1912. No. 34623 D.

Cyanidation of Antimonial Tailings, N. S. W. W. Archer Longbottom. Explains the difficulties of the problem and describes the equipment and method of working. 1700 w. Min & Engng Wld—July 20, 1912. No. 34687.

Minor Improvements in Cyanide Practice. Percy L. Morrisby. Explains improvements introduced at the Witwatersrand Mine. Ills. Discussion. 4000 w. Jour Chem, Met & Min Soc of S Africa—Aug., 1912. No. 36825 E.

Lead Salts in Cyanide Treatment. J. E. Clennell. A study of the action of lead compounds on cyanide solutions as improving extraction and eliminating cyanicides. 2500 w. Eng & Min Jour—Sept. 28, 1912. No. 36394.

Practical Cyaniding. John Randall. Reviews the history of cyaniding, explaining the chemical reaction, etc. 5000 w. Mines & Min—Aug., 1912. Serial. 1st part. No. 34946 C.

Cyaniding Troubles and Remedies. Herbert A. Megraw. Discusses the troubles and difficulties that may occur, and the remedies. 6000 w. Eng & Min Jour—Aug. 17, 1912. Serial. 1st part. No. 35247.

Copper and Sulphur in Cyanide Solution. Will H. Coghill. Explains a case in which the ready solubility of copper in cyanide makes the commercial extraction of silver from the ore a difficult problem. 2000 w. Min & Sci Pr—Aug. 17, 1912. No. 35381.

Cyanidation of the Granite-Bimetallic Tailings. Evans W. Buskett. A report of tests made to find the best method of recovering the values from tailings of the silver mines of. Ills. 4500 w. Min & Engng Wld—Aug. 17, 1912. No. 35275.

See also Precipitation, under *Gold and Silver*, and Tailing Plants, under *Ore Dressing and Concentration.*

Dredges

The Design and Mechanical Features of the California Gold Dredge. Robert E. Cranston. Describes designs commonly used in California, discussing the mechanical features. Ills. 14500 w. Jour Am Soc of Mech Engrs—Feb., 1912. No. 30692 D.

Dredging

Review of Gold Dredging in 1911. Charles Janin. Reviews work in various states. Ills. 2500 w. Min & Sci Pr—Jan. 13, 1912. No. 29697.

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Dutch Guiana

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Ecuador

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Economic Mining of Low-Grade Gravel, California. A. H. Martin. Describes practice in mining low-grade auriferous gravel. 1500 w. Min & Engng Wld—July 13, 1912. No. 34447.

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The Porcupine Gold Area of Northern Ontario. A. G. Burrows. Brief summary of the character of the deposits, distribution of veins, of the gold, etc. 1200 w. Qr Bul of Can Min Inst—Oct., 1911. No. 30050 N.

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Problems on the Strike. Josiah Bond. Illustrates and describes types of irregular ore occurrence along the strike of veins. 3000 w. Eng & Min Jour—Nov. 25, 1911. No. 28305.

A Mountain of Gold. T. A. Rickard. Reviews sensational discoveries of copper, silver, and gold, and explains why a mountain of gold is not likely to be found. Ills. 4000 w. Min & Sci Pr—Dec. 2, 1911. No. 28683.

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Principles of Gravel Mining. William H. Storms. Considers the fundamental principles of placer mining. 1500 w. Min & Sci Pr—Dec. 2, 1911. No. 28684.

The Law of the Pay Streak in Placer Deposits. J. B. Tyrrell. Presents results of a study of the placer deposits of the Klondike, believing the laws and principles may be applied to other alluvial deposits. 5000 w. Inst of Min & Met, Bul 92—May 9, 1912. No. 32796 N.

Churn-Drill Examination of Placers. James E. Dick. Illustrated description of drill and tools, method of setting up, driving casing, pumping, sampling, and calculations. 3500 w. Mines & Min—Sept., 1912. Serial. 1st part. No. 35696 C.

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Zinc Dust Tests. W. J. Sharwood. Report of tests to determine its value for precipitating purposes in a cyanide plant. Ills. 5000 w. Jour Chem, Met, & Min Soc of S Africa—Feb., 1912. No. 31982 E.

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South Africa and the World's Goid Production. Owen Letcher. Shows the importance of South Africa as a gold producer. Ills. 1800 w. Min & Engng Wld—Sept. 14, 1912. No. 35964.

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Two Decades of Mining on the Rand. A. Cooper Key. Analysis of Rand mining for the decade prior to, and the decade after, the Boer War shows that the gold distributed is approximately the same for the two periods. 1200 w. Eng & Min Jour—Aug. 24, 1912. No. 35419.

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"Salting"

The "Salting" of Samples and Means of Detection. George A. James. Calls attention to cases due to ignorance or carelessness. 2000 w. Min & Engng Wld—May 25, 1912. No. 33151.

Sea Water

The Facts About Gold, Silver and Iodine in Sea Water. Henry S. Blackmore. Gives scientific data collected by the writer and report of investigations and results. 4000 w. Cassier's Mag—Jan., 1912. No. 29879 B.

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A Modification of the "Gay-Lussac" Method for Silver-Bullion Containing Tin. Luis Emlynn Salas. Reports experiments made to find the conditions whereby by the Gay-Lussac method might be applied directly to their bullions. 3000 w. Bul Am Inst of Min Engrs—March, 1912. No. 31587 F.

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Geologic Structure of Silver Districts. W. G. Matteson. Illustrates and describes volcanic and sedimentary formations. 4000 w. Mines & Min—Jan., 1912. No. 29295 C.

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South Africa

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Proposed Treatment of Sulphide Ores with Nitric Acid, or So-Called Rankin Process. A description of this process for treating ores containing sulphides of iron, copper, lead and zinc, with accompanying gold and silver. 2500 w. Met & Chem Engng—Nov., 1911. No. 27608 C.

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The Occurrence of Gold in the Eocene Deposits of Texas. E. T. Dumble. A statement of facts concerning these deposits, so far as known. 1200 w. Bul Am Inst of Min Engrs—Oct., 1912. No. 37121 F.

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Transvaal

The Murchison Range. Alexander O. Brown. Gives the early history and discusses the future prospects of an outside district in the Transvaal. Map. 2200 w. Min Mag—Oct., 1912. No. 37017 B.

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The Development of the Republic District, Wash. Sidney Norman. Reviews the history of these gold and silver mines, and describes the present condition and needs of the camp for further development. Ills. 2500 w. Min & Engng Wld—July 6, 1912. No. 34291.

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IRON AND STEEL

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American Iron and Steel Institute. Elbert H. Gary. Presidential address giving a comprehensive view of the relation of the Institute to American progress. 5000 w. Mfrs' Rec—May 23, 1912. No. 33037.

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The Methods of the United States Steel Corporation for the Commercial Sampling and Analysis of Pig Iron. J. M. Camp. Read before the Int. Cong. of Ap. Chem. A compilation of standard methods for the sampling and subsequent analysis of molten pig iron. 10500 w. Met & Chem Engng—Oct., 1912. No. 36526 C.

Standardizing Rapid Analytical Methods for Steel Works and Other Purposes. W. H. Herdsman. Reviews the principles on which the Ridsdale analoid methods are based and the claims made to increased rapidity and accuracy. Also discussion. 8000 w. Jour W of Scotland Ir & St Inst—Nov., 1911. No. 30898 N.

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Asphyxiation by Blast-Furnace Gases. From *Ann. des Mines de Belgique*. Information concerning such accidents, the precautions that should be taken especially when gas mains are being cleaned. Ills. 2500 w. Ir & Coal Trds Rev—May 17, 1912. No. 33283 A.

Austria

The Styrian Erzberg (Der steirische Erzberg). A description of this iron mountain and the mining methods employed there. Ills. and Plates. 2100 w. Stahl u Eisen—Feb. 22, 1912. No. 31320 D.

Blast-Furnace Air

Advantages, Disadvantages and Cost of Combining Oxygen with the Draft in Blast-Furnaces (Vorteile, Nachteile und Kosten der zumischung von Sauerstoff zum Gebläsewinde der Hochöfen). Fr. W. Lürmann. General remarks on this practice. 1400 w. Stahl u Eisen—April 11, 1912. No. 32315 D.

Reduction and Carburation in Blast-Furnaces, Exemplified in Connection with Blast-Furnace Interruptions and in the Light of Smelting Tests (Reduktion und Kohlung im Hochofen, im Zusammenhange mit Hochofenstörungen und auf Grund von Schmelzversuchen erläutert). B. Osann. A metallurgical discussion. Ills. Serial. 1st part. 4900 w. Stahl u Eisen—March 21, 1912. No. 32009 D.

Blast-Furnace Gas

Utilization of Blast Furnace Gas. Everard Brown. Considers its use under boilers, and in gas engines. 1200 w. Power—Oct. 8, 1912. No. 36706.

Dust Determination in Blast Furnace Gas (Ueber Staubbestimmungen im Gichtgas). O. Johannsen. Chemical and physical analysis. 2800 w. Stahl u Eisen—Jan. 4, 1912. No. 30502 D.

Iron Metallurgy and Large Gas Blowers (L'Industrie Sidérurgie et les grandes Moteurs à Gaz). L. Marchis. Determination of the proportion of gas required. 11000 w. Anales d l Soc Cien Argentina—March, 1911. No. 28512 N.

Blast-Furnace Practice

The Rational Valuation and Quality Efficiency of Furnace-stock. John Jermain Porter. Deals with the smelting value and describes methods. 3300 w. Bul Am Inst of Min Engrs—March, 1912. No. 31588 F.

Calculations on the Fuel Requirements in Direct Blast-Furnace Reduction (Ueber die Berechnung des zur direkten Reduktion im Hochofen verbrauchten Kohlenstoffs). F. Wüst. Methods for this determination are described. 1750 w. Stahl u Eisen—March 7, 1912. No. 31339 D.

Experiments With the Thiogen Process. Frank L. Wilson. Condensed from an address by S. W. Young, giving a detailed account of the process and the results obtained. 1500 w. Min & Sci Pr—April 6, 1912. No. 31928.

The Upward Concentration of Kish by Flotation. Henry M. Howe. Investigates the concentration of graphite in the upper part of a casting, giving opinions of other investigators, and the author's conclusions. Ills. 1200 w. Met & Chem Engng—June, 1912. No. 33416 C.

Blast-Furnaces

The Latest Thin-Lined Blast Furnace. Illustrated description of a furnace plant at Cleveland, Ohio, and the special safety devices. 3500 w. Ir Age—Feb. 1, 1912. No. 30191 C.

A New Thin-Lined Blast Furnace. Illustrated description of a type of furnace adapted to existing stacks, and the cooling system. 2000 w. Ir Age—April 18, 1912. No. 32141 C.

Thin-Lined Blast Furnace Construction. David Baker. Illustrates and describes designs for controlling heat losses applicable to both old and new furnaces. 600 w. Ir Age—Dec. 28, 1911. No. 28922.

Automatic Blast Furnace Charging. David Baker. Illustrated description of a mechanical controller and its operation. 1500 w. Ir Age—April 4, 1912. No. 31761 C.

A Water-Cooled Blast Furnace. A blast-furnace with a comparatively thin lining, cooled by a film of water, in place of the usual solid brick lining, in operation in Detroit, Mich. Ills. 2500 w. Eng News—Aug. 22, 1912. No. 35395.

Making Charcoal Iron Under Modern Conditions. Illustrated description of the new blast furnace plant at Wells, Mich. 2000 w. Ir Trd Rev—Oct. 3, 1912. No. 36505.

Direct and Indirect Reduction in the Blast Furnace. M. Levin. An explanation, illustrated by examples. 2000 w. Met & Chem Engng—July, 1912. No. 34175 C.

Improvements in Drawing Iron and Slag from Blast-Furnaces (Vorschläge zur Verbesserung der Eisen- und Schlackenabfuhr in Hochofenwerken). E. Langheinrich. Discusses the problem of removing molten iron and slag from the furnace. Ills. 2100 w. Stahl u Eisen—Nov. 16, 1911. No. 28802 D.

The Iroquois Iron Co.'s New Blast Furnaces. Illustrated description of the two 300-ton stacks at South Chicago, which are driven by turbo blowers. 3000 w. Ir Trd Rev—Jan. 4, 1912. No. 29368.

Notes on the Compounding of Gas Currents in Blast-Furnaces (Untersuchungen über die Zusammensetzung des Gasstromes im Hochofen). M. Levin and H. Niedt. Diagrammatic studies. 3700 w. Stahl u Eisen—Dec. 28, 1911. No. 29706 D.

New Blast Furnace at the Works of the Barrow Hematite Steel Company, Limited. Drawings, photographs and description. 2500 w. Ir & Coal Trds Rev—Jan. 19, 1912. No. 30186 A.

Blast Furnaces of the Rogers-Brown Iron Co. Illustrated description of two new stacks, Nos. 3 and 4, added to the Susquehanna plant, at Buffalo. 2500 w. Ir Trd Rev—April 11, 1912. No. 31927.

Inland Steel Company's New Blast Furnace. Illustrates and describes details of the second 400-ton furnace at Indiana Harbor, 1200 w. Ir Age—May 9, 1912. No. 32661 C.

Recent American Blast-Furnace Plants (Neuere Amerikanische Hochofenanlagen). H. Groeck. Description of some of the late furnaces erected in the United States. Ills. 5300 w. Zeitschr d Ver deutscher Ing—May 25, 1912. No. 33576 D.

Coke Recovery and Blast Furnace Practice in the Interior of China (Koksherstellung und Hochofenbetrieb im Innern Chinas). Fr. Lux. Describes the primitive methods in vogue. Ills. 1400 w. Stahl u Eisen—Aug. 22, 1912. No. 36114 D.

The Blast Furnace as a Power Producer. George A. Orrok. Reviews briefly the history of blast furnace development and the application of gas engines to blast furnace practice. Ills. Short discussion. 4000 w. Pro Brooklyn Engrs' Club, Paper 93—Jan., 1911. No. 27979 N.

Useful Information Relating to the Utilization of Blast Furnace Gas. Horace Allen. Deals with calculations required in the design of apparatus to be provided between the blast furnace and the point of application for heating purposes, and the driving of gas engines. 2500 w. Prac Engr—Nov. 24, 1911. No. 28656 A.

See also Dry Blast, under *Iron and Steel*, and Blast Furnaces, and Gas Firing, under MECHANICAL ENGINEERING, *Combustion Motors*.

Blast-Furnace Slags

Blast-Furnace Slag; Its Properties and Uses (Eisenhochofenschlacken, ihre Eigenschaften und ihre Verwendung). H. Fleissner. Giving chemical analysis and stating some of the methods of application. Ills. Serial. 1st part. 4000 w. Oest Zeit f Berg- u Hüttenwesen—Jan. 20, 1912. No. 30518 D.

The Utility of Blast-Furnace Slag (Ueber die Verwertung der Hochofenschlacken). Hans Fleissner. Describes modes of treatment for its conversion into Portland cement. Ills. 4500 w. Stahl u Eisen—Feb. 8, 1912. No. 31318 D.

The Effect of Alumina in Blast-Furnace Slags. J. E. Johnson, Jr. Introductory remarks on the effect of lime and magnesia, with discussion of the effect of alumina. 3500 w. Bul Am Inst of Min Engrs—Oct., 1912. No. 37129 F.

See also Cement, under CIVIL ENGINEERING, *Materials of Construction*.

Blast Turbines

Blast Turbines for the Blast Furnaces of Viscaya (Turbogebläse, System Rateau, für die Hochöfen von Vizcaya). A. Rateau. A description of the author's use of the turbine. Ills. 2800 w. Zeit des Oest Ing u Arch Ver—Oct. 6, 1911. No. 28457 D.

Blowers

The Efficiency of Small Blowers. P. J. Haler and H. T. Wright. Gives brief descriptions of the Roots blower, a Crowell blower, and a rotary positive blower. Ills. 700 w. Prac Engr—June 14, 1912. Serial. 1st part. No. 33925 A.

Blowing Engines in Steel Works (Machines Soufflantes d'Aciéries). Ch. Dantin. Illustrated description of the machines put out by Leflaive et Cie. Plate. 3000 w. Genie Civil—Sept. 7, 1912. No. 36200 D.

See also Turbo-Blowers, under MECHANICAL ENGINEERING, *Power and Transmission.*

Brazil

The Iron Resources of Brazil. John Brooks Elgar. An illustrated article discussing the possibilities of vast deposits and their influence upon possible commercial relations with the United States. 2500 w. Cassier's Mag—June, 1912. No. 33846 B.

Briquetting

See same heading under *Ore Dressing and Concentration.*

Canada

The Production of Iron and Steel in Canada During the Calendar Year 1910. John McLeish. Information from the annual report on mineral production. 7000 w. Can Dept of Mines—No. 115. No. 30057 N.

Charcoal Iron

Charcoal Iron by a New Process. Describes a new process invented by J. Jones Hudson, which consists in smelting the charge between layers of charcoal in a specially designed furnace of the open hearth type. Ills. 1000 w. Ir Age—April 18, 1912. No. 32140 C.

Chili

The Iron Ore Resources of Chili, with a Note on the Corral Iron and Steel Works. Charles Vattier. Read before the Iron & Steel Inst. Information concerning the various iron districts. 6000 w. Ir & Coal Trds Rev—Oct. 4, 1912. No. 36931 A.

China

The Ta-yeh Iron-Ore Deposits, Hu-pei Province, China. C. M. Weld. Describes the ore bodies as examined during a brief visit, and quotes opinions from other investigators. 3500 w. Bul Am Inst of Min Engrs—Oct., 1912. No. 37125 F.

Notes on the Han-Yeh-Ping Iron and Coal Company, China. Cho-Yang and Cheng-Fu Wang. Illustrations and brief description of the chief plants. 900 w. Sch of Mines Qr—Jan., 1912. No. 30780 D.

Colorado

A Titaniferous Iron-Ore Deposit in Boulder County, Colo. E. P. Jennings. Describes deposits at Caribou, giving analyses of the ore. Ills. 2000 w. Bul Chem Inst of Min Engrs—Oct., 1912. No. 37124 F.

Competition

Competition: Its Uses and Abuses. Joseph G. Butler, Jr. Read before the Am. Iron & Steel Inst. Discusses the subject of rivalry in quality and in economics of production. General discussion. 2500 w. Ir Age—May 23, 1912. No. 33052 C.

Contracts

Contract Obligations in the Steel Trade. E. A. S. Clarke. Read before the Am. Iron & Steel Inst. Discusses abuses and suggests remedies. Also discussion. 4000 w. Ir Age—May 23, 1912. No. 33051 C.

Dry Blast

The New Dry Blast at Standish, N. Y. John B. Miles. Illustrated description of the plant of the Northern Iron Co., extracting moisture from the air after compression by sprays of water and sprays of brine. 1200 w. Ir Age—April 25, 1912. No. 32331 C.

A New Dry Blast Process. John B. Miles. Illustrated description of a dry blast plant at Standish, N. Y., employing a process differing in essentials from any other process tried in practice. 1200 w. Ir & Coal Trds Rev—April 26, 1912. No. 32858 A.

A New Dry Blast Process for Iron Furnaces. John B. Miles. Describes the process employed at Standish, N. Y., which differs in essentials from other processes tried. 1500 w. Mech Engr—July 19, 1912. No. 34890 A.

Duplex Process

The Duplex Process at Sydney, N. S. Illustrates and describes this process which aims to combine the rapidity of the Bessimer process with the elasticity and excellence of the open-hearth process. 1700 w. Can Min Jour—Sept. 15, 1912. No. 36084.

Electric Power

The Utilization of Electric Power for Iron Mining. Illustrated description of developments of the Cleveland Cliffs Iron Co. on the Marquette Range, and of the Carp River hydro-electric project. 3500

w. Ir Trd Rev—July 25, 1912. Serial. 1st part. No. 34784.

The Electrically Operated Loftus Ironstone Mine. Illustrated description of an example of mine electrification in Great Britain. 1500 w. Sci Am Sup—July 20, 1912. No. 34656.

Electrification of a Reversing Mill of the Algona Steel Co. Bradley T. McCormick. Illustrated detailed description of an electric reversing mill equipment at Sault Ste. Marie, Can. 2000 w. Pro Am Inst of Elec Engrs—April, 1912. No. 32422 F.

Electrometallurgy

Progress in the Electrometallurgy of Iron and Steel. D. F. Campbell. Abstract of a paper read before the Faraday Soc. Reviews the continuous progress in the development of electrometallurgical methods of smelting. 1800 w. Elect'n, Lond—Nov. 3, 1911. No. 28020 A.

The Electric Reduction of Iron Ores. Otto Frick. With special reference to results obtained in the electro-metals furnace at Trollhättan, Sweden, and in the Noble furnace at Heroult, Cal. 8800 w. Met & Chem Engng—Dec., 1911. No. 28586 C.

Recent Developments in Electric Iron Smelting. Thomas D. Robertson. Describes briefly the process of blast furnace smelting, and considers in detail this new process for the manufacture of pig iron from its ores. Ills. 3500 w. Ap Sci—Feb., 1912. No. 30883 C.

The Electric Furnace and High-Grade Steel. William R. Walker. Read before the Am. Iron & Steel Inst. Reports good results thus far with rails. General discussion. 4000 w. Ir Age—May 23, 1912. No. 33053 C.

The Electric Furnace Process as Applied to the Metallurgy of Steels. Harold G. Ade Stedman. Abstract of a paper before the Cleveland (England) Inst. of Engrs. Considers principles governing the correct design of electric furnaces and their auxiliary apparatus, with particular reference to continuous running and low operation costs. Ills. 6000 w. Can Min Jour—May 15, 1912. No. 32965.

Heat-Treatment of Steel by the Electric Furnace. H. Ralph Badger. Explains the advantages of electric heating for hardening steel, the application and importance. Ills. 3000 w. Mach, N Y—June, 1912. No. 33352 C.

The Electric Furnace in Steel Manufacture. William R. Walker. Read before the Am. Ir. & St. Inst. Discusses the possibilities of producing an improved quality of steel. 4500 w. Ir Trd Rev—May 30, 1912. No. 33329.

Experiments in Electrical Smelting of Iron Ores. S. Rice. Information concerning this new process. Ills. 4000 w. Min & Engng Wld—April 13, 1912. No. 31972.

Electric Furnace Production of Pig Iron and Pig Steel. Joseph W. Richards. Deals with the technical side of the process of the reduction of iron ores in an electrically heated furnace. Discussion. Ills. 8000 w. Pro Engrs' Soc of W Penn—March, 1912. No. 32122 D.

The Production of Cast Iron in Electric Furnaces in Sweden (La Production de la Fonte au Four Électrique en Suède). Paul Nicou. A description of the Trollhättan plant and report of its results. Ills. 2500 w. Rev de Metall—April, 1912. No. 32088 H.

The Production of Pig-Iron in the Electric Furnace. Trans. from *Le Génie Civil.* Gives results of experiments at Trollhättan, Sweden. 1500 w. Elec Rev, Lond—July 12, 1912. No. 34658 A.

Possible Reduction of the Power Consumption in Electric Steel Refining Furnaces. Carl Hering. Aims to determine from present practice approximately the maximum economy which may be expected. 2500 w. Met & Chem Engng—Nov., 1911. No. 27612 C.

Electric Smelting and Reduction of Ore in England. Information concerning a new undertaking and some of its accomplishments. 2000 w. Elect'n, Lond—Dec. 29, 1911. No. 29610 A.

The Electro-Metallurgical and Electro-Siderurgical Plant at Ugine, Savoy (Les Installations électrométallurgiques et électrosidérurgiques d'Ugine, Savoie). Plans and description of hydro-electric foundry on the Arly River. Ills. 8000 w. Technique Moderne—Feb. 1, 1912. No. 30609 D.

Manufacture of Steel in the Girod Electric Furnace. Dr. A. Mueller. Trans. from *Stahl und Eisen.* Illustrated description of this electric furnace plant for refining molten steel. 6000 w. Met & Chem Engng—Nov., 1911. No. 27611 C.

Electric Furnace Pig Iron at Trollhättan. Information from a recent report of progress. Ills. 1500 w. Met & Chem Engng—July, 1912. No. 34173 C.

Recent Results in Electric Production of Cast Steel at the Trollhättan Experimental Plant (Neuere Ergebnisse der elektrischen Roheisenerzeugung auf dem Versuchswerk am Trollhättan). B. Neumann. Reviews the report issued by the Jernkontoret in May, 1912. Ills. 3500 w. Stahl u Eisen—Aug. 22, 1912. No. 36115 D.

Electric Iron-Smelting at Trollhättan. Editorial review of the report dealing particularly with the period from Aug. 4, 1911, to March 6, 1912. Ills. 2500 w. Engng—Sept. 20, 1912. No. 36494 A.

Two-Stage Electric Smelting of Iron Ores. Woolsey M'A. Johnson. Illustrated account of unusual recent results with the Johnson zinc furnaces. 1500 w. Ir Age—Aug. 29, 1912. No. 35607 C.

See also Canada, Electric Furnaces, and Electrometallurgy, under ELECTRICAL ENGINEERING, *Electro-Chemistry;* also Electric Furnaces, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

England

Note on Some Remains of Early Iron Manufacture in Staffordshire. Thomas Turner. Read before the Iron & Steel Inst. Notes on early iron work in England, analyzing the products and briefly reviewing the history. Ills. 2000 w. Engng—May 10, 1912. No. 32990 A.

Ferro-Alloys

Melting Ferro-Manganese in the Electric Furnace (Ueber das Umschmelzen von Ferromangan im elektrischen Ofen). R. Korten. Paper read before the German Metallurgical Association on operation with the Keller furnace. Discussion. 5000 w. Stahl u Eisen—March 14, 1912. No. 32006 D.

Remelting of Ferromanganese in the Electric Furnace and the Use of Molten Ferromanganese for Deoxidation. Abstract translation of an interesting article in *Stahl und Eisen,* the author being Felix Schroeder, discussing results obtained with a furnace of the Keller system. Ills. 1500 w. Met & Chem Engng—Dec., 1911. No. 28587 C.

Flue Dust

The West Process for Sintering Flue Dust. James G. West. Reports tests showing results of different methods of preparing fine iron ores for the blast furnace. Ills. 4000 w Ir Age—Oct. 24, 1912. No. 36983 C.

See also Steel Works Lighting, under MINING AND METALLURGY, *Iron and Steel.*

France-Germany

Iron Ore in German and French Lorraine (Le Minerai de Fer en Lorraine Allemande et en Lorraine Française). A. Guillain. Statistics on the production and consumption of iron in this region. Tables. 19400 w. Rev de Metall—Oct., 1911. No. 28414 E + F.

Fume Precipitation

Electrical Fume-Precipitation. F. G. Cottrell. On the commercial development of electrical methods of precipitating the suspended matter from smelter-smoke. General discussion. Ills. 4000 w. Bul Am Inst of Min Engrs—July, 1912. No. 34845 F.

Germany

A Highly Specialized German Steel Plant. Illustrated description of the Becker works which manufacture high grade carbon and alloy steels by the crucible, open-hearth and electric furnace processes. 2000 w. Ir Trd Rev—Aug. 22, 1912. No. 35383.

Harmet Process

The New "Harmet" Fluid Compression Plant of Nova Scotia Steel and Coal Company, Ltd., at Sydney Mines, N. S. Explains how this system improves on the Whitworth system and its advantages. Ills. 3000 w. Can Min Jour—Sept. 15, 1912. No. 36082.

Hematite

Hematite Ores of Brazil and a Comparison with Hematite Ores of Lake Superior. C. K. Leith and E. C. Harder. Describes these deposits, discussing their origin. 5000 w. Ec-Geol—Oct.-Nov., 1911. No. 29064 D.

Hematite in Veins of Globe District. John Sanders. Describes the occurrence of hematite in association with pyrite and chalcopyrite in Arizona. 1200 w. Eng & Min Jour—Dec. 16, 1911. No. 29005.

Hot Blast Stoves

Regenerative Stoves: Their Relation to Blast Furnace Practice. A. N. Diehl. Considers their design, operation and economical importance. Discussion. 14500 w. Pro Engrs' Soc of W Penn—Jan., 1912. No. 30812 D.

Imports

Imports of Foreign Iron Ore in 1911. Information concerning imports from different countries, illustrating loading appliances and methods. 4000 w. Ir Trd Rev—Feb. 1, 1912. No. 30198.

India

Further Notes on the Early Use of Iron in India. H. G. Graves. Read before the Iron & Steel Inst. Describes the big iron beams found at Kanarak, the method of construction, etc. 2200 w. Engng—May 10, 1912. No. 32991 A.

Industry

Economic Conditions of the Iron and Steel Industry. Walter Dixon. Abstract from presidential address before the W. of Scotland Iron & Steel Inst. Discusses conditions of these industries in Great Britain, the causes, etc. 3000 w. Ir & Coal Trds Rev—Oct. 27, 1911. No. 27735 A.

Ingot Iron

Pittsburg Pure Brand of American Uniform Ingot Iron. H. M. Feldmann. Read before the Am. Inst. of Steam Boiler Inspts. Information concerning this material and its non-corrosive qualities. 3000 w. Boiler Maker—Jan., 1912. No. 29504.

Ingots

A New Method of Tapping Steel Ingots (Sur un nouveau procédé de coulée des lingots d'acier). M. J. Corbiau. Description of new process originated by M. Defays-Lanser. Ills. 3000 w. Rev de Métal—July, 1912. No. 34571 H.

New Process for Casting Ingots. J. Corbidu. Trans. from *La Metallurgie.* Illustrates and describes device invented by M. Defays-Lanser for shearing off at one stroke all the runners connecting the ingots of a group. 1200 w. Ir & Coal Trds Rev—July 26, 1912. No. 35177 A.

Phenomena in Rolling Fresh Steel Ingots. Information from an article by Karl Neu, in *Stahl und Eisen,* concerning the bursting of billets rolled from ingots only a short time in the soaking pits. 600 w. Ir Age—Aug. 1, 1912. No. 34990 C.

A New Method of Casting Small Ingots. Illustrated description of a method devised by M. Defays-Lanser, in which the molds are made by the use of grooved plates which are pressed together. 1000 w. Ir Age—Sept. 26, 1912. No. 36280 C.

The Production of Small Ingots in Quantity. G. Marton in *Stahl und Eisen.* Illustrated description of an ingot stripping and handling plant by which the whole battery of ingot moulds is stripped at once, without manual labor. 700 w. Ir & Coal Trds Rev—April 5, 1912. No. 32105 A.

An Arrangement for Casting Small Ingots. Illustrates and describes a method used in two European steel plants for their production in large quantities. 800 w. Ir Age—July 4, 1912. No. 34248 C.

Method of Revealing Segregation in Ingots. Sir Robert A. Hadfield. Read before the Iron & Steel Inst. Gives results of a series of experiments in which molten copper was used to detect defects in steel ingots. Ills. 2200 w. Ir Trd Rev—Oct. 10, 1912. No. 36744

Method of Producing Sound Ingots. Sir Robert Hadfield. Read before the Iron & Steel Inst. Introductory remarks with a description of the author's method of casting steel ingots, castings, etc., which insures soundness, freedom from piping, and absence of segregation. Ills. 3500 w. Engng—Oct. 4, 1912. No. 36850 A.

Use of Thermit for Obtaining Sound Steel Ingots. Dr. Hans Goldschmidt. Read before the Iron & Steel Inst. Describes a new method for the improvement of the soundness of steel ingots by the aid of thermit. 2500 w. Engng—Oct. 4, 1912. No. 36851 A.

The Production of Sound Steel Ingots. Dr. J. E. Stead's discussion of the papers by Dr. Hans Goldschmidt and by Sir Robert A. Hadfield, on the phenomena of solidification at the center of the ingot. 2000 w. Ir Age—Oct. 24, 1912. No. 36985 C.

The Use of Anti-Piping-Thermit in Cast Iron Ingots (Ueber die Verwendung von Lunkerthermit bei Flusseisen-Blöcken). C. Canaris. Describes the method of applying thermit and gives results of tests. Discussion. Ills. 5800 w. Stahl u Eisen. Feb. 22, 1912. No. 31321 D.

The Use of Anti-Piping Thermit in Steel Ingots. C. Canaris. Gives results of a series of experiments on treated and untreated ingots to ascertain the effects of thermit on steel. 1500 w. Ir Trd Rev—March 28, 1912. No. 31612.

Slag Inclosures in Steel Ingots. From a paper by Walter Rosenhains, read before the Int. Cong. for Testing Materials. Considers the distribution and mechanical suspension of the impurities in molten steel, and the promise of the electric furnace. Ills. 3500 w. Ir Age—Oct. 3, 1912. No. 36562 C.

Specifications for Composition Ingot. A. P. Ford. Gives specifications believed to be practical and just to both buyer and seller. 1200 w. Brass Wld—Feb., 1912. No. 30473.

See also Cast Iron, Metallurgy, and Steel, under MECHANICAL ENGINEERING, *Materials of Construction.*

Iron-Making

Great Iron-Making Nations. R. H. Sweetser. Explains the situation to-day and in earlier periods. 1500 w. Ir Age—Dec. 14, 1911. No. 28942.

Iron Ore

Europe's Supply of Iron Ore. Editorial review of a recent publication by Dr. Th. Sehmer, discussing the subject from the

German point of view. 1600 w. Engng—Jan. 26, 1912. No. 30320 A.

The Evolution of Iron and Steel Processes and the World's Reserves of Iron Ore. M. P. Angles d'Auriac. Extracts from *Bul. of the Soc. de l'Indus. Min.* Gives information concerning United States, Germany and Great Britain. Diagrams. 3000 w. Ir & Coal Trds Rev—March 1, 1912. No. 31157 A.

Iron-Ore Mines

Iron-Ore Mines on Mesabi and Vermilion Ranges. W. J. Lauck. Report of working conditions and labor supply. 1800 w. Min & Engng Wld—Dec. 23, 1911. No. 29156.

Italy

Italy's Iron Industry (Italiens Eisenindustrie). Review of metallurgic conditions in Italy. Ills. and Maps. Serial. 1st Part. 2800 w. Stahl u Eisen—Feb. 15, 1912. No. 31319 D.

Lake Superior

Lake Superior Ore Developments. D. E. Woodbridge. Review of the trade of 1911, report of new discoveries, new developments and improvements. 3000 w. Ir Age—Jan. 4, 1912. (Special.) No. 29335 D.

New Developments in the Lake Iron Ore District. A summary of events on the Minnesota and Michigan ranges since the beginning of the year. Ills. 7000 w. Ir Trd Rev—July 18, 1912. No. 34637.

Limonite

See Prospecting, under *Mining.*

Lothringen Grants

The Lothringen Iron-mine Grants from 1810 to 1910 (Die Verleihung der Eisenerzbergwerke in Lothringen von 1810 bis 1910). Dr. Wehmann. History of the grants for the century and causes for the same. 4500 w. Stahl u Eisen—Nov. 16, 1911. No. 28803 D.

Magnetic Ores

The Bearing of the Theories of the Origin of Magnetic Iron Ores on Their Possible Extent. Frank L. Nason. Analysis, arguments and conclusions. 5000 w. Bul Am Inst of Min Engrs—July, 1912. No. 34847 F.

Manganese

The Technical Importance of Manganese and Its Compounds (Die technische Bedeutung des Mangans und seiner Verbindungen). E. Priwoznik. Its uses in the various industries. 3500 w. Oest Zeit f Berg- u Hüttenwesen—Oct. 28, 1911. No. 28453 D.

Mayari Steel

Mayari Steel: Its Properties and Uses. Account of the development of this new chrome-nickel steel. Ills. 3000 w. Ir Age—Jan. 4, 1912. (Special.) No. 29336 D.

Mesabi

The Biwabik Iron Mine. C. A. Tupper. Describes the operations and explains the factors contributing to the success of the oldest mine on the Mesabi range. Ills. 3000 w. Eng & Min Jour—Nov. 25, 1911. No. 28304.

Metallization

The Metallization of Low-Grade Iron Ores. George E. Edwards. Abstract of paper by Prof. Albert E. White to be published in *Mineral Resources of Michigan.* Discusses the interesting experiment in progress by J. T. Jones, by which low-grade ore is to be reduced to a product fit for blast-furnace use, and possibly for open hearth use in future work. 2500 w. Min & Engng Wld—March 9, 1912. No. 31093.

Metallography

Apparatus for Metallography. Carle R. Hayward. Illustrated description of a grinding and polishing machine for preparing specimens of metals for microscopic examination. 800 w. Ir & Coal Trds Rev—April 5, 1912. No. 32104 A.

Observations on the Structure of Some Rough Forgings (Observations sur la Structure de quelques pièces brutes de forge). A. Portevin and V. Bernard. Relation between their mechanical properties and the structure of "Widmanstätten." Ills. 1500 w. Rev de Métal—July, 1912. No. 34572 H.

See also same heading, under MECHANICAL ENGINEERING, *Measurement.*

Metallurgy

Metallurgy of Iron and Steel. Bradley Stoughton. New sintering processes, developments in furnaces and apparatus, etc., are reviewed. 3000 w. Eng & Min Jour—Jan. 6, 1912. No. 29427.

Notes on Metallurgy in 1911 (Mitteilungen über die Metallforschung in Jahre 1911). H. Winter. Reviews some of the metallurgical investigations made during the past year. 2400 w. Glückauf—March 23, 1912. No. 32029 D.

The Beginnings of Physical Chemistry. Harry C. Jones. First of a series of articles of interest to metallurgists. 5000 w. Eng & Min Jour—March 23, 1912. No. 31475.

The Progress in Metallurgy (Les Progrès de la Métallurgie). Sir R. A. Hadfield. Brief review of metallurgical progress since the time of Faraday. Diagrams. 4000 w. Génie Civil—Feb. 17, 1912. No. 31407 D.

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Michigan

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Zimmerman Mine of the Spring Valley Iron Co. George E. Edwards. Illustrated account of this Michigan property. 1500 w. Min & Engng Wld—Aug. 17, 1912. No. 35274.

Season's Development on the Marquette Iron Range. George E. Edwards. Reviews developments, describing improvements effected at various properties. Ills. 2500 w. Min & Engng Wld—Aug. 31, 1912. No. 35714.

The Loretto Mine and Surroundings, Michigan. George E. Edwards. Illustrated description of this property and its hematite ores, and the diverting of the Sturgeon River. 1500 w. Min & Engng Wld—Sept. 7, 1912. No. 35845.

The Crystal Falls Iron Company, Michigan. George E. Edwards. Illustrated description of the development. 2500 w. Min & Engng Wld—Oct. 19, 1912. No. 36910.

Wickwire Mining Co.'s Property at Iron River, Mich. George E. Edwards. Illustrates and describes methods of opening the Wickwire and Cortland mines. 3000 w. Min & Engng Wld—Oct. 5, 1912. No. 36590.

Minnesota

A Quiet Year on the Minnesota Iron Ranges. H. Cole Estep. Illustrated review of developments on the Mesabi, Vermillion, and Cuyuna ranges. 7000 w. Ir Trd Rev—Jan. 4, 1912. No. 29365.

Iron Mining on the Mesabi Range. A. L. Gerry. Illustrates and describes the districts and methods of mining. 3000 w. Eng & Min Jour—Oct. 12, 1912. No. 36788.

Missouri

The Iron Ore Resources of Missouri. John Jermain Porter. Map and illustrated review of the iron industry of the State, and the iron ore deposits. 8500 w. Mfrs' Rec—July 8, 1912. No. 34635.

New Brunswick

The Bathurst Iron Deposits, N. B. An account of their development. Ills. 1200 w. Can Min Jour—Oct. 1, 1912. Serial. 1st part. No. 36566.

Newport, Mich.

The Newport Iron-Mine. B. W. Vallat. Gives the geology, history, equipment, and methods of operation. Ills. 5000 w. Bul Am Inst of Min Engrs—Nov., 1911. No. 28191 F.

New York

Limonite Deposits of Staten Island, New York. Charles R. Fettke. Describes their distribution and occurrence. 2500 w. Sch of Mines Qr—July, 1912. No. 34625 D.

Nomenclature

Uniform Nomenclature of Iron and Steel. The Committee's report to the International Association for Testing Materials. 8000 w. Ir Age—Sept. 5, 1912. No. 35772 C.

Nomenclature of the Microscopic Constituents of Iron and Steel. Henry M. Howe. Discusses the need of uniformity, considering some of the obstacles. 5000 w. Met & Chem Engng—Jan., 1912. No. 29808 C.

Norway

Norway's Iron-Ore Deposits. Editorial review of the report of a special committee appointed to investigate these deposits. 3000 w. Engng—Dec. 29, 1911. No. 29620 A.

Sydvaranger Iron Mines. A. Udhaug. Illustrated description of the ore deposits, mining operations, separation and briquetting plant, etc., with remarks on the future outlook. 3000 w. Ir & Coal Trds Rev—Feb. 2, 1912. No. 30412 A.

Mining and Concentrating the Sydvaranger Iron Ores. Dwight E. Woodbridge. Describes methods used in Norwegian Lapland of electrical and mechanical interest. Ills. 4000 w. Engineering Magazine—April, 1912. No. 31547 B.

The Sydvaranger Iron Mines in Norway. Brief illustrated description of mines in the most northern province in Norway, and their fine equipment. 2500 w. Elec Rev, Lond—March 1, 1912. No. 31133 A.

Nova Scotia

Annapolis Iron Ore Deposits in Nova Scotia. Gives results of a survey of the Canadian government and analyses of the ore shipped. Map. 1500 w. Ir Trd Rev—July 4, 1912. No. 34246.

Iron and Steel in Nova Scotia. J. H. Plummer. Information concerning the condition of the iron and steel industries, the progress, and needs. 3500 w. Can Min Jour—Sept. 15, 1912. No. 36079.

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Ontario

The Eastern Michipicoten Iron Range. Alois Goetz. Notes based on memoranda taken while prospecting on this range in Canada, describing the properties. 3000 w. Eng & Min Jour—June 1, 1912. No. 33344.

Open-Hearth Furnaces

Dimensions of Open-Hearth Furnaces. M. A. Pawloff. From a paper in *Stahl und Eisen*. Notes on ordinary gas-fired furnaces, oil-fired furnaces, and mixers and furnaces for continuous operations. 1500 w. Ir & Coal Trds Rev—Jan. 26, 1912. No. 30328 A.

New Open-Hearth Furnace Designs. Herbert F. Miller, Jr. Illustrated account of how experiments led to changes in combustion arrangements. 1500 w. Ir Age—June 27, 1912. No. 33986 C.

An Open-Hearth Furnace of a Detachable Type. Illustrated description of the Carr detachable open-hearth furnace in the plant of the Alloy Steel Casting Co., Wheeling, W. Va. 4000 w. Ir Trd Rev—June 20, 1912. No. 33865.

Open-Hearth Furnace of a Detachable Type. The Carr furnace is illustrated and described. 4500 w. Foundry—June, 1912. No. 33410.

Open-Hearth Furnace Design and Manipulation. John Ploehm. Read before the Am. Found. Assn. Describes how the various areas and dimensions of a 25-ton furnace were proportioned and the results obtained. Ills. 3500 w. Ir Trd Rev—Oct. 10, 1912. No. 36743.

Historical Information on Regenerator Furnaces (Historique des Fours à récupération). A. Folliet. Review of the work of the Siemens brothers. Ills. 3600 w. All Industrielle—July, 1912. No. 35568 D.

Recent Developments in Open-Hearth Steel-Practice. N. E. Maccallum. Traces the causes which led to the development of the double-ladle practice, showing the increase in tonnage and decrease in cost resulting. Ills. 3300 w. Bul Am Inst of Min Engrs—Oct., 1912. No. 37131 F.

Manufacture of Open-Hearth Steel With Reference to Improvement in Yield. F. W. Paul. Read before the Iron & Steel Inst. Describes ordinary practice, and a proposed new method of charging and silicon elimination. 3000 w. Mech Wld—Oct. 4, 1912. No. 36844 A.

Lower Rhine Lignite in Open-Hearth Work (Niederrheinische Braunkohle im Martinwerksbetrieb). O. Simmersbach. Shows the economic features of this coal when briquetted for the purpose. Ills. 3100 w. Stahl u Eisen—Sept. 5, 1912. No. 36600 D.

See also Coke-Oven Gas, under *Coal and Coke;* and Furnaces, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Ore Deposits

Iron-Ore Reserves. Edwin C. Eckel. Discusses phases of the iron-ore-reserve problem, in both its industrial and political relations. 5400 w. Engineering Magazine—Aug., 1912. No. 34751 B.

Iron-Ore Reserves. Edwin C Eckel. Second article of a series discussing their actual extent and probable duration. 6000 w. Engineering Magazine—Sept., 1912. No. 35443 B.

American Iron-Ore Reserves. Edwin C. Eckel. Third and last of a series of articles discusses three logical bases for their valuation. 5000 w. Engineering Magazine—Oct., 1912. No. 36286 B.

The Iron-Ore Supplies of the World. J. W. Gregory in *Sci. Prog.* An inventory which shows that the supply of iron ore will outlast the coking coal for its reduction. 3000 w. Sci Am Sup—Nov. 11, 1911. No. 27791.

The Iron Ore Question. Julio de Lazurtegui. Abstract of an article in the *Revue Econ. Intnat.* A synthetical study of the iron ore resources. 7500 w. Ir & Coal Trds Rev—Oct. 4, 1912. Serial. 1st part. No. 36932 A.

Cuban Iron Ore Deposits. Dwight E. Woodbridge. Describes these deposits and their development. Ills. 1800 w. Can Min Jour—Nov. 15, 1911. No. 28181.

The Effects of a Basic Igneous Instrusion on a Lake Superior Iron-Bearing Formation. Carl Zapffe. Report of investigation made to determine whether the alteration was a recrystallization, or whether the hot igneous mass was the cause of removal or introduction of constituents. 9500 w. Ec-Geol—Feb.-March, 1912. No. 31644 D.

A Peculiar Hematite Ore on the Tract of the Durham Mine, Durham, Penna. W. S. Bayley. Read before the Geol. Soc. of Am. Describes the occurrence. 1800 w. Ec-Geol—Feb.-March, 1912. No. 31645 D.

Pig Iron

Chemical and Physical Properties of Pig Iron. John Jermain Porter. Read before the Pittsburgh Found. Assn. Reports interesting comparisons and tests made of different brands, and gives information related. 3300 w. Ir Trd Rev—Nov. 8, 1911. No. 27752.

The Use of Electric Furnace Pig Iron in the Open Hearth Furnace. D. A. Lyon. Brief account of results of tests showing that "pig steel" made in the electric furnace is better suited to the production of open-hearth steel than is the normal blast furnace pig iron. 1500 w. Met & Chem Engng—Sept., 1912. No. 35729 C.

Prices

Iron and Steel Prices for Fourteen Years. Monthly averages computed from weekly market quotations. 2500 w. Supplement. Ir Age—Jan. 4, 1912. (Special.) No. 29829 D.

The Control of Prices in the Export Steel Trade. Harold Jeans. Read before the Staffordshire Iron & Steel Inst. Discusses the international position as affected by the Conference held in Brussels. 7500 w. Ir & Coal Trds Rev—March 29, 1912. No. 31904 A.

Progress

Improvement in the Quality of American Steel. A résumé by manufacturers of the progress made in recent years, particularly by heat treatment and the development of alloy steels. 11500 w. Ir Age—Jan. 4, 1912. (Special.) No. 29328 D.

The World's Progress in Metallurgy. Sir Robert A. Hadfield. Remarks on the unsolved problems, the alloy steels, and the great advance made. 3500 w. Ir Age—Jan. 4, 1912. (Special.) No. 29331 D.

Metallurgical Developments in Iron and Steel. John S. Unger. Read before the Am. Iron & Steel Inst. Considers recent changes in blast furnace and steel works practice. Short discussion. 3500 w. Ir Age—May 23, 1912. No. 33054 C.

Pyrites

Commercial Pyrites; Its Sources, Grades and Uses. W. C. Dumas. Abstract of paper read before the Georgia section of the Am. Chem. Soc. Information concerning the world's deposits, the production and uses. 2000 w. Min & Engng Wld—April 13, 1912. No. 31971.

Reduction

Experiments in the Reduction of Iron Ore at Herrang in Sweden. G. Grondal. Information concerning experiments undertaken with a view to finding an economical solution of the problem of reducing iron ores into iron-sponge by means of a direct process. Ills. 1500 w. Ir & Coal Trds Rev—Aug. 30, 1912. No. 35903 A.

Rerolling Mill

A Large Rerolling Mill of Unusual Design. Illustrated detailed description of the Laclede Steel Co.'s new mill for rerolling rails and billets. 2500 w. Ir Trd Rev—April 4, 1912. No. 31789.

Reverberatory Furnaces

The Application of Hydraulic Laws in the Design of Reverberatory Furnaces (Die Anwendung der Gesetze Hydraulik auf die Berechnung der Flammöfen). C. Dichmann. Compares the flow of flames to the flow of water. Serial. 1st part. Ills. 3800 w. Stahl u Eisen—Dec. 7, 1911. No. 29701 D.

Review of 1910

Iron Metallurgy in the Year 1910 (Das Eisenhüttenwesen im Jahre 1910). B. Neumann. A tabular review of the iron industry of the world. Serial. 1st part. 4900 w. Glückauf—Dec. 2, 1911. No. 29711 D.

Reviews of 1911

I. Iron and Steel Industry in United States in 1911. II. The World's Iron and Steel Industries in 1911. General reviews with statistics of production, consumption, prices, etc. 8000 w. Min & Engng Wld—Jan. 27, 1912. (Special.) No. 30081 C.

The Iron and Steel Industry in 1911. Frederick Hobart. Reviews of production and prices by different writers from the various districts. 8500 w. Eng & Min Jour—Jan. 6, 1912. No. 29422.

The Sheet and Tin Plate Trades in 1911. B. E. V. Luty. Reports the lowest prices in the history of the trade, production, etc. 2000 w. Ir Age—Jan. 4, 1912. (Special.) No. 29334 D.

Reviews of the Iron Trade in 1911. Reports by different authors of trade at Pittsburgh, Philadelphia, and Chicago. 6500 w. Ir Age—Jan 4, 1912. (Special.) No. 29332 D.

Iron Ore Movement on the Great Lakes in 1911. George H. Cushing. Review of the lake shipments during the year and of trade peculiarities. 2500 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29565 C.

Rolling Mills

The Work Done and the Power Required in Rolling Steel. Harold Wheatley. Considers factors affecting the design and operation of driving machinery and how these factors are determined. 4500 w. Engineering Magazine—April, 1912. No. 31549 B.

Notes on the Power Required in Wire, Beam and Plate Rolling (Beitrag zur Kenntnis des Kraftbedarfs von Träger-Draht- und Blechstrassen). J. Puppe. Mathematical discussion. Serial. 1st part. Ills. 3500 w. Stahl u Eisen—Jan. 4, 1911. No. 30501 D.

Power Consumption of Mills for Rolling Girders, Wire and Plates. J. Puppe. From *Stahl und Eisen*. Information from a series of tests made to determine the most economical source of motive power for the work, resulting in the electrification of the mills. 1500 w. Ir & Coal Trds Rev—March 15, 1912. Serial. 1st part. No. 31545 A.

Rolling Mill Practice in the United States. J. Puppe. Read before the Iron & Steel Inst. Notes on the leading features of the various types of mills. 5000 w. Ir & Coal Trds Rev—Oct. 4, 1912. No. 36927 A.

Guides for Small-Bar Mills. F. Munker. Trans. from *Stahl u. Eisen*. Second article of a series. Illustrates and describes guides for various types of mills. 1200 w. Ir & Coal Trds Rev—Nov. 24, 1911. No. 28675 A.

Electric Reversible Rolling Mills and Auxiliary Equipment. Brief illustrated description of an interesting plant in Austria. 1200 w. Sci Am Sup—June 15, 1912. No. 33717.

Cambria Steel Co.'s Motor-Driven Merchant Mills. Illustrates and describes a successful installation of electrically-operated steel rolling equipment. 2200 w. Ir Trd Rev—May 30, 1912. No. 33327.

Rolling High-Speed Tool Steel Bars. Illustrated description of the electrically driven rolling mill at Latrobe, Pa. Gives curves of the power requirements for rolling various sections. 1800 w. Ir Age—July 11, 1912. No. 34355 C.

Tests on the Electrically Driven Rolling Mills at the Julien Foundry, Oberschlesien (Versuche an dem elektrisch angetriebenen Blockwalzwerk auf der Julienhütte, Oberschlesien). L. Schnackenburg. Description of plant, installations, and tests, with results. Ills. and plates. 7000 w. Elek Kraft u Bahnen—June 14, 1912. No. 34521 D.

Tests for Rolling Mill Power Requirements. B. N. Westcott. Discusses the problem of determining the power for steam engine and electric motor-driven steel mills. 3000 w. Ir Trd Rev—Feb. 15, 1912. No. 30430.

Electric Rolling Mills at Middlesbrough. Illustrated description of electrically driven reversible rolling mills showing modern practice. 3000 w. Engr, Lond—March 15, 1912. No. 31533 A.

A Notable Example of British Practice in Rolling Mill Electrification. G. M. Brown. Describes the electrical equipment of a 28-in. cogging mill at Middlesborough, England. Ills. 2500 w. Gen Elec Rev—April, 1912. No. 31863 C.

The Operation of a Large Electrically Driven Reversing Rolling Mill. Wilfred Sykes. Illustrated description of the plant of the Illinois Steel Co., which has been in operation five years, and the results obtained. 4500 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33242 F.

See also same heading, under *Copper;* Power Measurement, under MECHANICAL ENGINEERING, *Measurement*, and Electric Drive, under MECHANICAL ENGINEERING, *Power and Transmission.*

Roll Pressure

The Question of Roll Pressure on Sheet Metals (Ein neuer Vorschlag für die Regelung des Walzdruckes an Blechwalzwerken). J. Puppe. Presents the subject of hydraulic governing and discusses the most vital of its many weak points. Ills. 2000 w. Stahl u Eisen—Nov. 23, 1911. No. 28805 D.

Roman Iron

Notes on a Bloom of Roman Iron Found at Corstopitum (Corbridge). Sir Hugh Bell. Read before the Iron & Steel Inst. Describes a large mass of wrought iron unearthed in England and explains what led to its discovery. Ills. 3000 w. Engng—May 10, 1912. No. 32989 A.

Russia

The Russian Iron Industry (Die russische Eisenindustrie). B. Simmersbach. Review of the iron production from 1890 to 1910. Serial. 1st part. 2700 w. Oest Zeit f Berg- u Hüttenwesen—Dec. 28, 1911. No. 29709 D.

Smelting

Electric Furnace Methods of Iron Production. John B. C. Kershaw. Illustrates and describes various furnaces used in electric iron ore smelting. 4500 w. Ir Trd Rev—Jan. 4, 1912. No. 29367.

Air in Pyritic Smelting. E. W. Walter. States facts determined by experience in pyritic smelting. 1800 w. Eng & Min Jour—April 20, 1912. No. 32224.

Notes on Pyritic Smelting. George A. Guess. Defines pyritic smelting as slag formation from sulphide iron, and considers details of the work. 6500 w. Eng & Min Jour—Jan. 13, 1912. No. 29576.

Notes on Smelting Sulphurous Calcined Pyrites in Blast Furnaces (Beiträge zur Verhüttung schwefelhaltiger Kiesabbrände im Hochofen). E. Schulz. Abstracts from a lecture delivered before the Breslau Technical High School. Serial. 1st part. 2800 w. Stahl u Eisen—Aug. 1, 1912. No. 36100 D.

Thermic Analysis of Smelting Processes (Technisch-thermische Analyse von Hüttenprocessen). K. Friedrich. Discussing graphical methods of pyrometric analyses. Ills. 2100 w. Serial. 1st part. Stahl u Eisen—Nov. 23, 1911. No. 28804 D.

The Pennsylvania Smelting Company Plant. S. L. Goodale and H. C. Ray. Illustrated description of the plant at Carnegie, Pa. 2500 w. Min & Sci Pr—July 27, 1912. No. 34999.

See also Electro-Metallurgy, under *Iron and Steel;* and Ore Treatment, under *Ore Dressing and Concentration.*

Southern States

The Future of the South in the Manufacture of Iron and Steel. John Jermain Porter. Information concerning the ore resources and fuel, discussing advantages and disadvantages affecting manufacture. 3500 w. Mfrs' Rec—Feb. 22, 1912. (Special.) No. 30744 D.

Steel

The Heat Treatment of Steel. James H. Herron. Read before the Metal Trds. Supts. & Foremen's Club of Cleveland, O. Discusses the equipment and methods employed. 5500 w. Ir Age—Nov. 23, 1911. No. 28236.

The Heat Treatment of Steel. James H. Herron. Read before the Metal Trds. Supts. & Foremen's Club of Cleveland. Considers only carbon steels used for manufacturing purposes and from a low carbon content to approximately carbon of 1 per cent. Ills. 2500 w. Mech Wld—Feb. 2, 1912. Serial. 1st part. No. 30399 A.

Notes on the Heat Treatment of Steel. Henry Souther. Discusses results expected from the practical adaptation of heat treatment in connection with shop management. 2500 w. Ir Age—Jan. 4, 1912. (Special.) No. 29325 D.

The Production of Sound Steel. Sir Robert A. Hadfield. Explains how material can be produced which will be free from segregation, blowholes, or piping. Ills. 1500 w. Ir Age—Feb. 1, 1912. No. 30192 C.

Steel. J. W. Richards. Reviews briefly the past and present meaning of the term. 1800 w. Met & Chem Engng—May, 1912. No. 32645 C.

Heavy Steel Industry. Arthur Cooper. Presidential address to the Iron & Steel Inst., reviewing the development of the Bessemer and open-hearth processes and their modifications. 7000 w. Ir & Coal Trds Rev—May 10, 1912. No. 33013 A.

Improvement in the Quality of American Steel. T. W. Robinson. Summation of the steel rail situation in respect to quality, referring to work at rail mills. 1500 w. Ir Age—Jan. 11, 1912. No. 29514 C.

The German Steel Syndicate: Details of the Statutes. A résumé of its statutes showing how the combination has been administered, and related information. 4000 w. Ir & Coal Trds Rev—April 19, 1912. No. 32459 A.

See also Ingots, under *Iron and Steel;* Cast Iron, Metallurgy, and Steel, under MECHANICAL ENGINEERING, *Materials of Construction.*

Steel Making

The Carbonizing of Steel by the Use of Gases. E. F. Lake. Discusses early and modern methods. 4000 w. Ir Age—Jan. 4, 1912. (Special.) No. 29339 D.

Infusion Steel Processes. A. J. Thompson. Discusses the production of steel by absorption. Ills. 1400 w. Cassier's Mag—Jan., 1912. No. 29885 B.

The Development of the Steel Industry from a Metallurgical Standpoint (Die

Entwicklung der Gussstahlfabrik auf Metallurgischem Gebiete). Reviews practice in the metallurgy of steel as influenced by the Krupp Steel Works. Ills. 4800 w. Stahl u Eisen—Aug. 8, 1912. No. 36109 D.

Guns and Armor Plate (Das Geschütz- und Panzerwesen). Description of the Krupp plant for the making of large-bore cannon and armor plate. Ills. 7000 w. Stahl u Eisen—Aug. 8, 1912. No. 36108 D.

The Manufacture of Tool Steel. Edward K. Hammond. Illustrated description of the processes and equipment used in the plant of the Columbia Tool Steel Co., at Chicago Heights, Ill. 5500 w. Ir Age—Oct. 3, 1912. No. 36561 C.

The Making of Wootz or Indian Steel. A. R. Roy. Describes the methods of making this celebrated steel, from which the famous Damascus swords were made. Ills. 2000 w. Ir Age—Oct. 3, 1912. No. 36560 C.

Steel Works

The Cockerill Works, Seraing, Belgium. Photographic illustrations of a great continental plant, with note. 300 w. Engineering Magazine—Feb., 1912. No. 30024 B.

The Development of the American Steel Industry. W. A. Day. Illustrated review of the great steel works and their equipment and methods. 5500 w. Cassier's Mag—Sept., 1912. No. 36691 B.

Recent Developments in Steel-Works Practice. B. W. Head. Read before the W. of Scotland Iron & Steel Inst. Considers the better utilization of waste gases, recent developments in the open-hearth process, the Talbot process, furnaces, etc. Ills. 4000 w. Ir & Coal Trds Rev—May 17, 1912. Serial. 1st part. No. 33281 A.

Steel Works Yields. Percy Longmuir and W. H. Robinson. Read before the Iron & Steel Inst. Gives results obtained week by week from the more typical departments, for a complete working year. 2000 w. Ir & Coal Trds Rev—Oct. 4, 1912. No. 36921 A.

The Minnesota Steel Co.'s New Plant at Duluth. Illustrates and describes features of construction and arrangement. 2000 w. Ir Trd Rev—Feb. 8, 1912. No. 30334.

The New Steel Plant at Duluth. Illustrated description of the present status of construction work on the plant of the Minnesota Steel Co. 1000 w. Ir Age—Nov. 30, 1911. No. 28605.

New Mills at Algoma Steel Plant. John A. Sommers. Illustrated description of repairs and installation at Sault Ste. Marie, giving nearly 40% increased rail capacity. 1200 w. Ir Age—Sept. 26, 1912. No. 36279 C.

Western Steel Corporation's Plant at Irondale, Wash. Illustrated description of the blast furnace, open-hearth plant and rolling mills of the only steel works on the Pacific coast. 2000 w. Ir Trd Rev —Dec. 7, 1911. No. 28679.

Plate and Merchant Mills at Haselton, Ohio. Illustrated description of a new finishing plant. 1200 w. Ir Age—Jan. 4, 1912. (Special.) No. 29322 D.

A Self-Contained Steel Plant in Southern Ohio. Illustrates and describes additions and extensions of the Portsmouth Steel Co.'s works, making it independently operating. Plate. 3000 w. Ir Trd Rev—March 28, 1912. No. 31611.

Plant of the Portsmouth (O.) Steel Company. Illustrated description of the arrangement and equipment of plate mill, bar mill, and jobbing and sheet mills. 1800 w. Ir Age—March 28, 1912. No. 31594 C.

The Tata Iron & Steel Company's Plant. Illustrated detailed description of the blast furnaces and steel works built in India. Plate. 2500 w. Ir Age—April 11, 1912. No. 31930 C.

The Works of the Tata Iron and Steel Company, Limited. Data and illustrations of the steel plant at Sakchi, Bengal, India. 3000 w. Ir & Coal Trds Rev—May 3, 1912. No. 32879 A.

Jessop's Steel Works at Sheffield, England. Brief account of the process of making crucible steel. Ills. 1400 w. Ry & Loc Engng—Jan., 1912. No. 29342 C.

The Becker Steel Works in Willich (Die Werksanlagen des Stahlwerks Becker in Willichs). Illustrated description of this plant. Serial. 1st part. 3600 w. Stahl u Eisen—June 6, 1912. No. 34502 D.

The Works of the Bethlehem Steel Company. Illustrated description of the plant and products. 2500 w. Engr, Lond —Aug. 2, 1912. No. 35207 A.

See also Chili, and Germany, under *Iron and Steel.*

Steel-Works Lighting

Modern Illumination in Iron and Steel Plants. C. E. Clewell Discusses good and bad installations of artificial lighting. Ills. 4500 w. Ir Trd Rev—Oct. 24, 1912. No. 36981.

Sulphides

Oxidation of Sulphides. V. H. Gottschalk and H. A. Buehler. Second paper on an experimental study of the oxidation of natural minerals. 4500 w. Ec-Geol—Jan., 1912. No. 31191 D.

The Mineral Sulphides of Iron. E. T. Allen, J. L. Crenshaw, and John Johnston; with Crystallographic Study, by Esper S. Larsen. A study of the application of chemistry to the problems of ore deposition with study of crystals. Ills. 16000 w. Am Jour of Sci—March, 1912. No. 31557 D.

Sweden

The Enrichment of Iron Ore in Sweden (Anreicherung der Eisenerze in Schweden). R. Lämmert. Review of practice in this country. Ills. and Diagrams. 4000 w. Stahl u Eisen—April 4, 1912. No. 32018 D.

The Supply of Swedish Iron Ore to Westphalian Blast Furnaces. Translated from *Glückauf*. Information concerning the quantity and origin of the iron ore smelted, the need of taking steps to provide for the future, etc. 2000 w. Ir & Coal Trds Rev—Nov. 3, 1911. No. 28049 A.

Swedish Steel

Swedish Steel. A. R. Roy. Reviews the history and discusses why Swedish iron is the best. General discussion. 13000 w. Pro N Y R R Club—Oct. 20, 1911. No. 28316.

Swedish Steel (Historical). A. R. Roy. Reviews the history of Swedish steels. Also general discussion. 4500 w. Pro Ry Club of Pittsburgh—Nov. 24, 1911. No. 30028 C.

Texas

Iron and Steel Making in Texas. William B. Phillips. The quality and availability of the ores, and information concerning the plants. 2500 w. Ir Age—Jan. 4, 1912. Serial. 1st part. (Special.) No. 29823 D.

Trade

Periodical Swings of the Iron Trade Defined. B. E. V. Luty. Parallelisms of the booms and depressions covering 20-year periods since 1867. 3000 w. Ir Trd Rev—Jan. 4, 1912. No. 29872.

Turkey

Studies on Iron Ore Deposits (Contribution a l'étude des gisements de minerais de fer). Francois Miron. Treating on the geology of the Strandja deposits on the Turko-Bulgaria frontier. Diagrams. 3800 w. Génie Civil—Sept. 28, 1912. No. 36683 D.

Wire Mills

Continuous Wire Milling at Eschweiler (Reinkontinuierliche Drahtstrasse in Eschweiler). Describes this plant and its machinery. Ills. 2600 w. Stahl u Eisen—Aug. 15, 1912. No. 36110 D.

LEAD AND ZINC

Arizona

The Castle Dome Lead District, Arizona. J. Nelson Nevins. Illustrated description of the district and its mines. 1800 w. Min & Sci Pr—June 22, 1912. No. 34096.

Blast-Roasting

On the Theory of Blast-Roasting of Galena. C. O. Bannister. Reviews the various processes that may be classified as blast-roasting and reports experimental research work and conclusions. 12500 w. Inst of Min & Met, Bul 89—Feb. 8, 1912. No. 30908 N.

Bohemia

A Trip to Przibram, Bohemia. O. H. Hahn. Illustrated account of these Austrian lead mines, describing the metallurgy at the government reduction works. 3500 w. Eng & Min Jour—Nov. 25, 1911. No. 28303.

Concentrating

Small Concentrating Mills in the Wisconsin Zinc District. W. F. Boericke. An account of methods and costs. 3500 w. Min & Sci Pr—June 15, 1912. No. 33849.

Electric Power

Electricity in a Spanish Lead Mine. Illstrates and describes the electrical operation of the El Guindo mine, in the southern range of the Sierra Morena. 1500 w. Elec Rev, Lond—July 26, 1912. No. 35144 A.

Flotation Process

Flotation at Zinc Corporation, Ltd. D. P. Mitchell. Review of flotation processes used. 2500 w. Eng & Min Jour—Nov. 18, 1911. No. 28100.

See also Flotation Process, and Ore Treatment, under *Ore Dressing and Concentration.*

France

The Development of the Zinc Industry in Upper Silesia (Le Développment de l'Industrie du Zinc en Haute Silésie). Fr. Krantz. Reviews zinc extraction and refining processes in this region. Ills. 8500 w. Rev de Metal—August, 1912. No. 35573 H.

Germany

Galena and Zinc-blende in Lodes at the Northern Edge of the Rhenish Slate Mountains (Beiglanz und Blende in den Gängen am Nordrande des Rheinischen Schiefergebirges). Friedensburg. Describes the geology of the region. Ills. 4500 w. Glückauf—Nov. 25, 1911. No. 28872 D.

Graphite

Acme Graphite Mines and Mills. H. M. Beattie. An account of methods used at Byers, Pa. Ills. 3500 w. Eng & Min Jour—July 20, 1912. No. 34672.

Graphite in Quebec. H. P. H. Brumell. Information concerning the deposits and the recent improvement in the industry due to solutions of problems of concentrating and preparing the product for market. Ills. 1200 w. Can Min Jour—July 1, 1912. No. 34268.

Idaho

See same heading under *Gold and Silver.*

Lead Metallurgy

The Metallurgy of Lead in 1911. H. O. Hofman. Reports few changes, reviewing blast roasting, collection of flue dust, disposal of sulphurous gases, etc. 2000 w. Eng & Min Jour—Jan. 6, 1912. No. 29424.

Lead Production

The Production of Lead in 1911. Reviews production and markets, with a report of S.-E. Missouri by H. A. Wheeler. 5000 w. Eng & Min Jour—Jan. 6, 1912. No. 29419.

Refined Lead and Spelter in United States in 1911. Review of lead and zinc mining, the production and prices. 2500 w. Min & Engng Wld—Jan. 27, 1912. (Special.) No. 30079 C.

Lead Smelting

Method for Utilization of Lead-Furnace Fumes. L. S. Hughes. From *Jour. Ind. & Engng-Chem.* An account of its conversion into lead hydrate and the possibilities of the new process. 2000 w. Min & Engng Wld—April 27, 1912. No. 32444.

Notes on Bag Filtration Plants. Abstract of a paper by Anton Ellers before the Int. Cong. of Ap. Chem. Discusses bag filtration of fumes. Does not consider it a paying process on furnaces carrying low-grade charges, but highly profitable on converters treating leady mattes. 3500 w. Eng & Min Jour—Oct. 5, 1912. No. 36581.

Magnetic Process

Magnetic Separation of Zinc Iron Ores as Found in Southwestern Wisconsin. Otto E. Ruhoff. Describes laboratory tests to effect a separation without losing so much sulphur that the iron tailings are no longer of value to acid manufacturers. 3500 w. Met & Chem Engng—May, 1912. No. 32650 C.

See also Ore Treatment, under *Ore Dressing and Concentration.*

Mexico

See same heading under *Gold and Silver.*

Nevada

Zinc Mines of Southern Nevada. Douglas White. Describes the Yellow Pine district, the ores and costs of mining and shipping. 4500 w. Mines & Min—June, 1912. No. 33364 C.

Oil Process

See Ore Treatment, under *Ore Dressing and Concentration.*

Oklahoma

Oklahoma Lead and Zinc Fields. L. C. Snider. Information concerning the deposits and the mines being developed. 3000 w. Eng & Min Jour—Dec. 23, 1911. No. 29149.

The Miami Zinc-Lead District, Oklahoma. Temple Chapman. Gives map showing parallel runs of ore, describing the deposits. 1200 w. Eng & Min Jour—June 8, 1912. No. 33617.

Precipitation

The Estimation of Lead, Nickel, and Zinc by Precipitation as Oxalates and Titration with Potassium Permanganate. H. L. Ward. Reports results of experimental investigations. 1200 w. Am Jour of Sci—April, 1912. No. 31778 D.

Southern States

See same heading, under *Copper.*

Spelter

How the Metals Are Sold — Spelter. W. R. Ingalls. An account of the customs and practices obtained in the marketing, and the conditions that determine them. 2500 w. Eng & Min Jour—Oct. 26, 1912. No. 37011.

Tennessee

The Zinc Deposits of Northeastern Tennessee. A. H. Purdue. Report of the general geology, nature of the area, occurrence, mines and prospects, etc. Map and Ills. 63 pp. Tenn Geol Survey—Bul. 14. No. 36099 N.

White Lead

Process of Manufacturing Sublimed White Lead. Evans W. Buskett. Detailed description of the process and the machinery and equipment used. Line drawings. 2000 w. Min & Engng Wld—Feb. 17, 1912. No. 30477.

Wisconsin

The Wisconsin Zinc District. P. K. Kelley. Considers the production, operation, outlook and needs of this district. Ills. & Map. 1500 w. Min & Sci Pr—Feb. 17, 1912. No. 30710.

Zinc Analysis

The Determination of Sulphur in Roasted Blende. C. C. Nitchie. From the *Jour. of Ind. & Engng. Chem.* Describes a rapid method which has been in use more than a year. 2000 w. Min & Engng Wld—Feb. 10, 1912. No. 30365.

The Volatility of Zinc Oxide. O. L. Kowalke. Read before the Am. Elect-Chem Soc. Reports investigations, describing apparatus and procedure. 1200 w. Chem Engr—May, 1912. No. 33140 C.

Zinc Industry

The Zinc Industry in 1911. Review of production and market prices, with reports of districts by different authors. 5000 w. Eng & Min Jour—Jan. 6, 1912. No. 29421.

Zinc Metallurgy

The Metallurgy of Zinc. W. R. Ingalls. Report of the new works, improvements, smelting business, etc. 3000 w. Eng & Min Jour—Jan. 6, 1912. No. 29423.

Zinc Retort

A Zinc Retort with a Copper Bottom. F. L. Clerc. Aims to show how closely the conditions within a copper-bottom retort can be made to agree with the conditions in a fire-clay retort heated from the outside, and explains advantages. Ills. 4500 w. Met & Chem Engng—Aug., 1912. No. 34976 C.

The Chemical and Physical Reactions in a Zinc Retort. F. L. Clerc. Gives an analysis of the chemical and physical changes occurring within a zinc retort, with the view of discovering means of improvement. 4000 w. Met & Chem Engng—July, 1912. No. 34171 C.

Zinc Smelting

The Origin of Zinc Smelting. W. Hommel. Gives the history of the art which originated in India and was extensively practiced in China at an early period. Ills. 3500 w. Eng & Min Jour—June 15, 1912. No. 33733.

Notes on Electric Zinc Smelting. Woolsey McA. Johnson. Gives a short summary of a test, with comments. Ills. 1200 w. Met & Chem Engng—Sept., 1912. No. 35728 C.

The Electric Smelting of Zinc Ore. W. R. Ingalls. Discusses the possibilities of electric smelting, reviewing types of furnaces, practice, cost, etc. 4500 w. Trans Can Min Inst—Vol. V. Part I. No. 34378 N.

Principles of Zinc Roasting (Principes du Grillage de la Blende). W. Hommel. Describes furnaces and the methods of roasting in general use, as well as the principles involved. Ills. 11000 w. Rev de Metal—Sept., 1912. No. 36189 H.

The Electric Zinc Smelting Furnace. Charles F. Johnson. Describes the Johnson process for making valueless ores available. Ills. 2500 w. Met & Chem Engng—May, 1912. No. 32651 C.

The Reduction of Blue Powder in Zinc Smelting. Warren F. Bleeker. Abstract of a paper before the Am. Elec.-Chem. Soc. Describes experiments carried out to solve the problem of reducing to spelter this powder. 2000 w. Min & Engng Wld—May 4, 1912. No. 32610.

Zinc Smelting at Trollhattan. Summary of a paper by F. W. Harbord giving an account of the smelting of 537 tons of ore in electric furnaces, with statement of results and cost. 2000 w. Eng & Min Jour—Feb. 10, 1912. No. 30353.

Zinc Ore-Dressing in Colorado. H. C. Parmelee. Notes on magnetic separation at the Wellington mill, describing the methods and apparatus used; and the methods of the Eagle Mining & Milling Co. 4000 w. Met & Chem Engng—Sept., 1912. No. 35725 C.

Zinc Smelting in Kansas and Oklahoma. Gives the works in operation in the natural-gas fields with brief descriptions of their equipment and practice. 3000 w. Eng & Min Jour—April 27, 1912. No. 32399.

See also Roasting, under *Ore Dressing and Concentration.*

MINING

Accident Prevention

Increased Stringency of Transvaal New Regulations. Considers the new regulations for the enforcement of safety measures, and the prevention of accidents, the improvement of the health conditions, regulation of hours of labor, etc. 3500 w. Min & Engng Wld—Sept. 7, 1912. No. 35847.

First National Mine-Safety Demonstration. Herbert M. Wilson and Albert H. Fay. With a chapter on the explosion at the experimental mine, by George S. Rice. An account of the public demonstration in Forbes Field, Pittsburgh, Pa. Ills. 75 pp. U S Bureau of Mines—Bul 44. No. 36225 N.

Accidents

Mine Accidents and Their Prevention. Ed. Ryan. Address before the Engrs.' Club, Mackay Sch. of Mines. Explains some of the dangers and the means for protecting the workers. 4500 w. Min & Sci Pr—June 22, 1912. No. 34098.

Mines Accidents (Rescue and Aid) Act. Gives text of proposed new rules. 1500 w. Col Guard—March 1, 1912. No. 31143 A.

Accidents in Mines Caused by Falls of Ground. George B. Harrison. Presidential address before the Manchester Geol. & Min. Soc. Discusses timbering and methods for reducing such accidents. 4000 w. Ir & Coal Trds Rev—Nov. 17, 1911. No. 28366 A.

Accidents in Transvaal Mines. James Chilton. Discusses features of mining practice with the aim of reducing the accident rate. Also discussion. 7500 w. Jour Chem, Met, and Min Soc of S Africa—Nov., 1911. No. 29650 E.

Mining Casualties in Newfoundland. Frederick L. Hoffman. Information from recent report showing that the regulations are good, and ignorance is the chief cause of accidents. 2500 w. Eng & Min Jour—July 20, 1912. No. 34674.

Aerial Tramways

See same heading, under MECHANICAL ENGINEERING, *Transporting and Conveying.*

Air Blasts

So-Called Air Blasts and Roof Pressure. Tom Johnson. Brief paper and discussion of the cause. 2500 w. Jour Chem, Met & Min Soc of S Africa—Aug., 1912. No. 36824 E.

Air Compressors

See same heading, under MECHANICAL ENGINEERING, *Power and Transmission.*

Assaying

Makeshift Assaying for Prospectors. Arthur O. Christensen. Describes methods for using a blacksmith's forge and other simple heating devices. 2000 w. Eng & Min Jour—Dec. 23, 1911. No. 29151.

Blasting

Suggestions in Loading and Firing Well Drill Blast Holes. From a paper by S. R. Russell before the Nat. Lime Mfrs.' Assn. Gives records of loading and firing well drill holes in quarry work. 2500 w. Engng & Con—June 12, 1912. No. 33700.

Methods of making a 220,000 Cu. Yd. Blast in a Sandstone Quarry. Plan and description of a blast in a quarry at Tenino, Washington. 1200 w. Engng & Con—May 8, 1912. No. 32652.

The Dangers of Accident in Blasting with Electric Ignition and Fuse Ignition (Die Unfallgefahr bei der Schiessarbeit mit elektrischer Zündung und mit Zündschnurzündung). O. Dobbelstein. Investigations and tables on the ratio of accidents in both methods. 2000 w. Glückauf—April 13, 1912. No. 32704 D.

Electric Priming in Shaft Sinking (Die elektrische Zündung beim Schachtabteufen). Herr Lisse. Descriptive of proper arrangement of wires and a new apparatus for assuring the explosion of all charges. Ills. 1400 w. Glückauf—May 11, 1912. No. 33514 D.

California

North Star Mining Methods. Claude T. Rice. Illustrates and describes methods used at this gold mine in California. 4500 w. Eng & Min Jour—Nov. 18, 1911. No. 28099.

Caving System

Caving System at Ohio Copper Mine. Clarence C. Bamberger. Describes this system of mining showing that the cost compares favorably with steam-shovel methods. 1500 w. Eng & Min Jour—April 6, 1912. No. 31827.

Caving System in Chisholm District. L. D. Davenport. Illustrated description of the system employed on the Mesabi range in Minnesota. 1700 w. Eng & Min Jour—Sept. 7, 1912. Serial. 1st part. No. 35812.

Change House

Change House at Franklin Furnace, N. J. Drawings of an excellently designed house equipped with dressing rooms, lockers, showers, etc., for the employees. 200 w. Eng & Min Jour—Aug. 24, 1912. No. 35422.

Chile

The Mineral Region of Collahuasi. Manuel C. Goñzales. Describes mines yielding high-grade copper ore containing gold and silver. Ills. 1200 w. Eng & Min Jour—Nov. 11, 1911. No. 27796.

Mining Methods at Braden, Chile. Frank Langford. Outlines a system of economical deep mining in these copper mines. 1500 w. Min Mag—Nov., 1911. No. 28879 B.

Compressed Air

Compressed Air Plant for Mines. Lucius J. Wightman. Discusses compressor units and transmission systems with a view to economy. 2000 w. Compressed Air—May, 1912. No. 33093.

Tests on Compressed Air Jets and Ventilators Under Special Barometric Conditions (Versuche mit Druckluftstrahlapparaten und Ventilatoren zur Sonderbewetterung). O. Dobbelstein. Describes tests and their results as affecting mine conditions. Ills. 3100 w. Glückauf—Aug. 10, 1912. No. 36119 D.

A Novel Device for Reheating Compressed Air for Use in Rock Drills. Illustrated description of a simple portable air reheater intended for use directly at the tool. 1200 w. Engng & Con—Nov. 22, 1911. No. 28223.

Costs

A System of Keeping Underground Costs and Records. G. Hildick Smith. Describes a system of tabulated cost sheets and graphic records introduced at the Ferreira Gold Mine. Also general discussion. 4500 w. Jour Chem, Met, & Min Soc of S Africa—May, 1912. No. 34710 E.

A Statement of Working Costs. A. W. Allen. On costs of treatment in milling and cyaniding work. 800 w. Min & Sci Pr—Feb. 3, 1912. No. 30838.

Cost of Mining a Ton of Ore. Heath Steele. Considers the general average of low costs of mining is $1.40 per ton. In case of large deposits the cost may be as low as $1 per ton. 1400 w. Eng & Min Jour—May 25, 1912. No. 33081.

A Note on Mining and Concentrating Costs at Le Roi No. 2 Mines, Rossland, B. C. Ernest Levy. 500 w. Qr Bul of Can Min Inst—Dec., 1912. No. 30889 N.

Costs and Cost-Conditions at Bluebell Mine, British Columbia. S. S. Fowler. A statement of costs and conditions concerning the mining and concentration of ore at the Bluebell mine. 1800 w. Qr Bul Can Min Inst, No. 18—Feb., 1912. No. 31436 N.

See also Cost Keeping, under INDUSTRIAL ECONOMY.

Crosscuts

A Problem in Deep-Mine Exploration by Crosscut. Carl Henrich. Shows that the cost per foot is less for a large than for a small size crosscut. 2000 w. Engng & Min Wld—June 1, 1912. No. 33395.

Deep Mining

Copper Mining in America at Great Depths. Alexander Paterson. Read before the W. Branch of the Scottish Fed. Inst. of Min. Students in the Roy. Tech. College, Glasgow. Detailed description of methods of the Calumet & Hecla Mining Co. Diagrams. 3500 w. Ir & Coal Trds Rev—March 29, 1912. No. 31900 A.

Development

Development-Methods at Mineville, N. Y. Guy C. Stoltz. Illustrates and describes properties and development methods. 2500 w. Eng & Min Jour—Oct. 26, 1912. No. 37012.

Diamond Drilling

Recent Practice in Diamond Drilling and Borehole Surveying. John I. Hoffman. Describes recent improvements in the drilling and surveying of boreholes. Ills. 4000 w. Inst of Min & Met, Bul 91—April 11, 1912. No. 32338 N.

Cost of Diamond Drill Equipment. Heath Steele. The first costs of hand and of power drills are given. 1500 w. Eng & Min Jour—July 13, 1912. No. 34428.

Methods of Taking a Number of Cores from One Diamond Drill Hole and of Surveying the Boreholes. Describes methods used in South Africa, illustrating the instrument used. 4000 w. Engng & Con—July 3, 1912. No. 34240.

Diamond Drilling at Point Mamainse, Province of Ontario. Alfred C. Lane. A record of diamond drilling carried on near this point on the east shore of Lake Superior during 1907 and 1908. Has a bearing on the copper resources of Canada. Ills. & map. 59 pages. Can Dept of Mines—Bul. No. 6. No. 34798 N.

Speeds and Cost of Diamond Drilling at Porcupine, Canada. Albert E. Hall. Brief report. 800 w. Sch of Mines Qr—April, 1912. No. 32158 D.

Diamond Drill Results at Pearl Lake, Porcupine, Ontario. G. W. Thomson. Describes the ore, the structural conditions, sampling, method of averaging and related matters. 2000 w. Can Min Jour—April 1, 1912. No. 31768.

See also Diamonds, under *Rare Minerals.*

Drainage

The Loss of Mineral Areas in South Staffordshire. Isaac Meachem. Read before the S. Staffordshire and Warwickshire Inst. of Min. Engrs. Discusses large areas left unworked owing to submergence and to supports left for the surface. 2500 w. Ir & Coal Trds Rev—Feb. 23, 1912. No. 31051 A.

Dredges

An Australian Pump-Dredge. Charles Janin. Illustrated description of a pump hydraulic sluicing plant for treating gold-bearing alluvials. 1200 w. Min & Sci Pr—Nov. 11, 1911. No. 28071.

The Magpie Dredge, Montana. Lewis H. Eddy. Illustrated description of a 5-cu. ft. dredge of a modified California type. 3000 w. Eng & Min Jour—Aug. 24, 1912. No. 35421.

The Union Dredge at Folsom, Calif. Lewis H. Eddy. Illustrated description of this close-connected, bucket-elevator dredge, designed to dig 55 ft. below the water line. 1000 w. Eng & Min Jour—Aug. 10, 1912. No. 35116.

Reducing California Dredging Costs. Al. H. Martin. Explains economies resulting from the use of dredges having buckets of larger capacity. 1500 w. Mines & Min—June, 1912. No. 33366 C.

Drilling

Churn Drilling in New Mexico. I. J. Stauber. Describes method of prospecting by drilling, giving results and cost. Ills. 2200 w. Eng & Min Jour—Sept. 14, 1912. No. 35944.

The Rotary Drill in the Oil Fields. William H. Storms. Considers details of well drilling and where the rotary drill can be successfully employed. 1500 w. Min & Engng Wld—Aug. 31, 1912. No. 35715.

The Use of Pneumatic Drills in Coal Mining (Note sur l'Emploi des Marteaux Pneumatiques dans l'Exploitation des Mines de Houille). A. Jacquelin. Gives the advantages over hand methods, describes various machines, and gives a comparative study of them. Ills. 13000 w. Mem Soc Ing Civ de France—May, 1912. No. 36180 G.

See also Placers, under *Gold and Silver.*

Drills

Notes on the Design of Drill Bits. Ward Blackburn. Considers cutting more important than staying qualities. 2000 w. Eng & Min Jour—May 11, 1912. No. 32806.

A Comparison Between Portable Electric Drills and Portable Air Drills. A. G. Popcke. Ills. 800 w. Elec Jour—June, 1912. No. 34042.

Diagram for Determining the Volume of Air Required by Air Drills at Various Pressures and Altitudes. Diagram and brief explanation. 300 w. Engng & Con—Aug. 14, 1912. No. 35230.

Fixtures and Gages for Rock Drills. Fred H. Colvin. Gaging methods that secure good results are shown, and drilling fixtures used. Ills. 1500 w. Am Mach—April 11, 1912. No. 31860.

Tempering Drill Steel. Clarence C. Semple. Discusses methods of tempering. 800 w. Eng & Min Jour—May 11, 1912. Serial. 1st part. No. 32941.

Drilling Machines for Mining Plants (Bohrmaschinelle Bergbaubetriebe). L. Henker. Discusses various types of drills with particular attention to longitudinal machines. Ills. Serial. 1st part. 2000 w. Oest Zeit f Berg u Huttenwesen—March 9, 1912. No. 32014 D.

The New "Hardy-Simplex" Hammer Drill. Illustrated description of a new model known as type B 6. 1200 w. Col Guard—Aug 9, 1912. No. 35297 A.

A Sharpening Plant for Mine Drills. F. A. Stanley. Illustrates and describes mechanical equipment almost entirely automatic. 2000 w. Am Mach—Nov. 23, 1911. No. 28226.

3-Ft. and 3-Ft. 6-In. Radial Drilling Machines. Illustrates and describes two types. 600 w. Engng—April 26, 1912. No. 32844 A.

See also Compressed Air, and Diamond Drilling, under *Mining*, and Drills, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Electric Haulage

The Operation of Electric Ore Roads in Sweden. Oskar Gjessing. Map and illustrated description of lines electrified. 1800 w. Min & Engng Wld—May 25, 1912. No. 33147.

Electric Haulages in Mines. W. C. Mountain. Read before the N. of Eng. Branch of the Assn. of Min. Elec. Engrs. Illustrated explanation of the types used underground in collieries. 4500 w. Ir & Coal Trds Rev—March 1, 1912. No. 31159 A.

Single-Phase A. C. Locomotive Traction at the Rosenblumendelle Mine (Die elektrische Lokomotivförderung mit einphasigem Wechselstrom auf der Zeche Rosenblumendelle). G. Siemens. Description of system and causes of adoption of this type of tractor. 3700 w. Glückauf—Dec. 9, 1911. No. 29712 D.

See also Haulage, under MINING.

Electric Hoists

Electric Hoists for Mines. D. B. Rushmore. Excerpt from a paper read before the Am. Mining Cong. Four systems of motor hoisting are discussed. 2500 w. Eng & Min Jour—Dec. 16, 1911. No. 29001.

Electric Motors Versus Compressed-Air Engines for Driving Deep-Mine Hoists. K. A. Pauly. Compares the compressed-air system of hoisting with the various electrical systems, from the standpoint of first cost and cost of operation. 7000 w. Bul Am Inst of Min Engrs—Dec., 1911. No. 29083 F.

Application of Electrical Hoisting Engines. J. F. Springer. Illustrated description of an electrically-operated skip hoist, with a capacity of 15 tons, employed at a limestone crushing plant. 1800 w. Ir Trd Rev—Aug. 29, 1912. No. 35634.

Electric Winding Engines. A. E. du Pasquier. From a paper read before the S. Wales Inst. of Engrs. A comparison of systems and the influence of drum profile on the performance obtained. 2000 w. Col Guard—Sept. 20, 1912. Serial. 1st part. No. 36490 A.

Electrical Control of a Large Mine Hoist. H. W. Cheney. Describes the general layout of a mine, an electrically driven mine hoist and a novel control system, with tests. Ills. 4500 w. Pro Am Inst of Elec Engrs—March, 1912. No. 31579 F.

Electric Mine Hoists and Their Control. C. A. Tupper. Examines the claims of advocates of electric power, describing methods of hoisting and types of hoists. 2500 w. Min & Engng Wld—March 30, 1912. Serial. 1st part. No. 31687.

The Control of Electric Mine Hoists. S. Haar. Discusses rheostatic control and control by voltage variations. 3500 w. Gen Elec Rev—May, 1912. No. 33003 C.

The Ilgner System in Electric Hoisting Operations. George E. Edwards. Illustrates and describes the Leonard system of electric drive as modified by Charles Ilgner and applied to hoisting operations. 3000 w. Min & Engng Wld—May 11, 1912. No. 32819.

The Influence of Velocity Diagrams on the Size of the Driving Motors of Pulley Hoists Under the Leonard System (Der Einfluss des Geschwindigkeitsdiagramms auf die Grösse des Antriebmotors einer Triebscheiben-Fördermaschine in Leonard-Schaltung). G. Trefler. Mathematical discussion. Diagrams. 6000 w. Elek Kraft u Bahnen—Sept. 14, 1912. No. 36656 D.

Safety Devices for Electrically Driven Hoists (Sicherheitseinrichtungen bei elektrisch betriebenen Aufzügen). F. Wintermeyer. Explains diagrammatically the action of safety devices. Serial. 1st part. 1700 w. Elek Rund—Sept. 26, 1912. No. 36651 D.

The Question of Economy in Electric Mine Hoists (Zur Frage der Wirtschaftlichkeit elektrischer Hauptschachtfördermaschinen). W. Philippi. Review of the cost of construction and operation as determined at various mines. Diagrams. 6300 w. Glückauf—July 13, 1912. No. 35509 D.

Three-Phase Commutator Hoisting Engines (Fördermaschinen mit Antrieb durch Drehstrom-Kommutatormotoren). Herr Janzen. Detailed description of the Leonard connections in electrical hoisting engines. Ills. Serial. 1st part. 5700 w. Elek Kraft u Bahnen—Aug. 4, 1912. No. 36152 D.

Electric Hoist at Hecla Mine, Burke, Idaho. E. M. Murphy. Illustrated description of the installation of a new hoist at this lead-silver mine, and its operation, cost, and some of the results. 3500 w. Bul Am Inst of Min Engrs—Sept., 1912. No. 36308 F.

Electric Hoists on the Rand. Rowland Gascoyne. Compares the merits of the Ward Leonard and three-phase systems of hoisting. Ills. 1000 w. Eng & Min Jour—Nov. 18, 1911. No. 28097.

Electric Winding Gear at the West Rand Consolidated Gold Mines. Illustrated detailed description. 1200 w. Engng—Dec. 8, 1911. No. 29052 A.

Electrical Hoisting Plants on the Witwatersrand. Rowland Gascoyne. Information concerning the power plants, systems, etc. 3500 w. Min & Engng Wld—Feb. 10, 1912. No. 30366.

Electric Hoisting in South African Gold Mines. A. W. Brown. Illustrated description of the equipment and its operation. 1800 w. Elec Jour—March, 1912. No. 31603.

The New Electric Hoists at Ray, Ariz. Illustrates and describes large hoists operated by electric motor by means of rope drive. 2500 w. Mines & Min—Nov., 1911. No. 27626 C.

Electric Driven Hoisting Engines by Continuous Current Motors with Leonard Regulations or Monophase Motors with Double Commutation (La Commande Electrique des Machines d'Extraction par Moteur Continu avec Réglage Léonard, ou par Moteur Monophasé à Double Collecteur). Discussion on the relative merits of the two systems. Ills. and plate. 5500 w. Génie Civil—April 27, 1912. No. 32778 D.

Comparison between Electric and Steam Hoists (Untersuchungen an elektrisch und mit Dampf betriebenen Fördermaschinen). The report of an investigating committee appointed by the Society of German Engineers. Ills. 16000 w. Serial. 1st part. Glückauf—Oct. 21, 1911. No. 28428 D.

Experiments With Electric and Steam Hoisting Engines (Untersuchungen an elektrisch und mit Dampf betriebenen Fördermaschinen). Herr Bobbert. Results of tests on eight plants; four of each kind Ills. 4200 w. Zeitschr des Ver deutscher Ing—Sept. 7, 1912. No. 36621 D.

The Electric Mine Hoist as a Power Station Load. F. L. Stone. Discusses methods of keeping the peaks from the line. 2500 w. Gen Elec Rev—June, 1912. No. 33382 C.

See also Hoisting Engines, under *Mining.*

Electric Power

Electric Mining Applications. E. A. Lof. Explains the advantages of the electric system and the applications made. Ills. 6000 w. Sch of Mines Qr—July, 1912. No. 34619 D.

Electricity in Mines (L'électricité dans les mines). H. Marchand. Review of power plants, and power utilization in mining machinery. Ills. Serial. 1st part. 2400 w. L'Électricien—June 8, 1912. No. 33594 D.

Electric Plants in American Mines (Elektrische Anlagen in amerikanischen Bergwerken). Herr Steinhoff. Discusses the power requirements and power uses in American practice. Diagrams. 3300 w. Elek kraft u Bahnen—July 24, 1912. No. 35559 D.

Use of Electrical Energy in the Mines of the Empire District. Illustrates and describes extensive motor drive of mines and mills situated in the lead and zinc districts of Missouri and Kansas. 4000 w. Elec Wld—Aug. 31, 1912. No. 35690.

Electricity in Gold Mining. Brief illustrated description of the winding plant of the West Rand Consolidated mines. 1000 w. Elec Engr, Lond—Jan. 19, 1912. No. 30152 A.

The Installation and Use of Electricity in Mines. Gives text of the new amended Special Rules relating to the installation and use of electricity in mines. 2500 w. Col Guard—March 1, 1912. No. 31144 A.

The Operation of Electrical Apparatus in Mines by Remote Control. Jas. Gillespie. Read before the Assn. of Min. Elec. Engrs. Calls attention to the possibilities and advantages of remote control. 2500 w. Ir & Coal Trds Rev—April 12, 1912. No. 32288 A.

The Factor of Safety in Mine Electrical Installations. H. H. Clark. Urges that the requirements of safety, as well as efficiency, be considered in the installation and operation of electrical mining equipment. 4500 w. U S Bureau of Mines—Tech paper 19. No. 34371 N.

Electrical Operation of Limestone Quarries and Crusher Plants. P. N. Harrison. Illustrated article describing the routine of operations, and giving actual records. 3000 w. Elec Jour—June, 1912. No. 34037.

Electric Power for Utah and Idaho Mines. Warren Aikens. Illustrated description of the Utah-Idaho system of the Telluride Power Co. 3000 w. Min & Engng Wld—Oct. 12, 1912. Serial. 1st part. No. 36785.

Electric Power at Colorado Mines, Mills and Smelters. Warren Aikens. Illustrated account of progress in the use of electric power. 2500 w. Min & Engng Wld—Sept. 14, 1912. No. 35963.

Electric Power at Cripple Creek Mines, Colorado. Warren Aikens. Illustrated account of the plants furnishing electricity for use in the mines and mills and for other purposes, explaining the benefits of electric service. 1500 w. Min & Engng Wld—Sept. 21, 1912. No. 36089.

Electrical Equipment of the Calumet & Hecla Mining Co., Calumet, Mich. John Liston. Illustrated description. 3500 w. Gen Elec Rev—Aug., 1912. No. 34957 C.

Hydro-Electric Power for Minnesota Ranges. C. A. Tupper. Illustrated account of the Great Northern Power Co.'s project near Duluth, and the extensive transmission system. 3500 w. Min & Engng Wld—March 23, 1912. No. 31501.

Electrical Power in the Transvaal. Rowland Gascoyne. Illustrates and describes applications of electric power to winding, hauling, etc. 5500 w. Cassier's Mag—Feb., 1912. No. 30281 B.

Electrification of the Penn Mines, Menominee Range. George E. Edwards. Illustrates and describes the system used in applying electricity to these Michigan iron mines, and some results. 2500 w. Min & Engng Wld—March 16, 1912. No. 31229.

Electric Power in Eastern Iron Ore Mines. John Liston. A discussion of the substitution of electric for steam power in the operation of mining properties at Mineville, N. Y. Ills. 4000 w. Ir Trd Rev—March 21, 1912. No. 31452.

Electricity Applied to the Scottish Shale Oil Industry. Jas. R. Laird. Read before the Assn. of Min. Elec. Engrs (W. Scotland Branch). Illustrates and describes the process and the electrifying of the oil works. 2000 w. Ir & Coal Trds Rev—March 15, 1912. No. 31544 A.

Lancashire Electric Power Company's System, and Its Application to Lancashire Collieries. Charles D. Taite. Read before the Manchester (Eng.) Geol. and Min. Soc. Plans and detailed description. 3000 w. Ir & Coal Trds Rev—March 15, 1912. No. 31543 A.

Electric Power Plants in the Mines and Foundry Plants of Rhine, Westphalia, Belgium, Northern France and England (Elektrische Kraftanlagen auf Berg- und Hüttenwerken in Rheinland-Westfalen, Belgien, Nord-Frankreich und England). K. Hoefer. Points of similarity and difference in the applications of power. Ills. Serial. 1st part. 2800 w. Zeit f d Ges Turbinenwesen—Aug. 10, 1912. No. 36150 D.

See also Electric Hoists, and Hoists, under *Mining;* Electric Power, under *Iron and Steel;* Electric Power, under *Lead and Zinc,* and Mine Power, under ELECTRICAL ENGINEERING, *Generating Stations.*

Explosives

Electricity in Connection with Explosions. E. Kilburn Scott. Abstract of paper read before the Assn. of Min. Elec. Engrs., at Leeds, England. Considers the using of electric power for making explosives, and the use of electricity for discharging of explosives in underground work. 4500 w. Elec Engr, Lond—Nov. 3, 1911. No. 28014 A.

Recent Developments in Explosives. A. E. Anderson. Read at Telluride, Colo. Reviews briefly the development, especially the recent manufacture of powders from nitroglycerine, nitrotoluene and with or without nitrate of ammonia. 5500 w. Eng & Min Jour—Feb. 3, 1912. No. 30241.

Investigations of Explosives Used in Coal Mines. Clarence Hall, W. O. Snelling, and S. P. Howell, with a chapter on the natural gas used at Pittsburgh, by G. A. Burrell, and an introduction by Charles E. Munroe. Ills. 197 pages. Bureau of Mines—Bul 15. No. 30445 N.

The Use of Permissible Explosives. J. J. Rutledge and Clarence Hall. Information intended primarily for coal miners, especially for those working when inflammable gas or coal dust may cause explosions. Ills. 34 pages. M S Bureau of Mines, Bul No. 10. No. 33173 N.

The Effect of Stemming on the Efficiency of Explosives. Walter O. Snelling and Clarence Hall. Report of tests with statement of conclusions. 4500 w. U S Bureau of Mines—Tech. paper 17. No. 35320 N.

Magazines and Thaw Houses for Explosives. Clarence Hall and Spencer P. Howell. Considers the storage and handling of explosives, their protection in magazines, the thawing and construction of thaw houses. Ills. 8000 w. U. S. Bureau of Mines—Tech. paper 18. No. 35321 N.

Magazines and Thaw Houses for Explosives. Illustrated description of a magazine built by the U. S. Bureau of Mines, with a capacity of 20,000 to 30,000 lbs. of explosives, at a cost of $400. Also describes English and German practice. 1800 w. Engng & Con—Aug. 14, 1912. No. 35231.

The Behavior of Nitroglycerine When Heated. Walter O. Snelling and C. G. Storm. A report of investigations and results. Ills. 3000 w. U. S. Bureau of Mines, Tech. paper No. 12. No. 33174 N.

Safe Explosives for Use in Mines Containing Fire-Damp and Coal-Dust (Recherches sur les Explosifs de Sureté employés dans les Mines Grisouteuses et Poussiéreuses). J. Taffanal and H. Dautriche. Reviews the causes of fire-damp, etc., the composition of various safe explosives and their action. 6300 w. Rev Gen des Sciences—July 15, 1912. No. 35571 G.

Filling

Hydraulic Filling in European Mines. L. Bucherer. An account of the dry filling method formerly used in Silesia and the hydraulic methods now used. Ills. 3000 w. Mines & Min—June, 1912. No. 33356 C.

Floods

The Flooding of Superba Mine. Illustrated account of a downpour which wrecked surface structures and flooded mines near Uniontown, Pa. 2500 w. Mines & Min—Sept., 1912. No. 35693 C.

Fuses

The Rate of Burning of Fuse, as Influenced by Temperature and Pressure. Walter O. Snelling and Willard C. Cope. On investigation of conditions that cause retardation or acceleration in the rate of burning. 9000 w. Bureau of Mines—Paper 6. No. 30915 N.

Investigations of Fuse and Miners' Squibs. Clarence Hall and Spencer P. Howell. The tests reported aim to show the relative safety and efficiency of different devices for igniting explosives. 5000 w. U S Bureau of Mines—Paper 7. No. 31290 N.

Gas-Engine Power

Gas-Engine Power at French Mines and Smelters. Stuart Rice. Illustrates and describes a number of installations made by French companies. 2200 w. Min & Engng Wld—May 4, 1912. No. 32609.

Gas Wells

Closing a Gas Well in Hungary. Excerpts from an article by A. Strobl. An account of attempts to close the well, and the disturbances following the closing. Ills. 2000 w. Eng & Min Jour—July 27, 1912. No. 34812.

Geology

Geology Applied to Mine Examination. Ira B. Joralemon. Reviews the general procedure in making mine examinations showing that geology is nearly always the determining factor. 3500 w. Eng & Min Jour—Aug. 10, 1912. No. 35115.

Is Geology a Success as a Guide to Ore Deposits? Walter Harvey Weed. Proves that there is a significant association of ore bodies with certain breaks or fault-fissures, and with masses of porphyry. 2000 w. Min & Eng Wld—Aug. 10, 1912. No. 35129.

Faults. Ernest K. Hall. Notes upon means of distinguishing reverse from normal faults, with other observations. 1500 w. Aust Min Stand—June 13, 1912. No. 34483 B.

Some Relations between Gravity Anomalies and the Geologic Formation in the United States. William Bowie. Gives results of a study made by the U. S. Coast and Geodetic Survey. 1200 w. Am Jour of Sci—March, 1912. No. 31558 D.

Relations of the Degree of Metamorphism to Geological Structure and to Acid Igneous Intrusion in the Narragansett Basin, Rhode Island. F. H. Lahee. Map and study of the geology of these carboniferous rocks; their petrology and metamorphism; and the post-carboniferous intrusives. 3500 w. Am Jour of Sci—March, 1912. Serial. 1st part. No. 31560 D.

See also Geology, under *Coal and Coke*, and Ore Deposits, under *Miscellany*.

Haulage

Conveyance of Workmen Underground. W. H. Pickering. Sketches and description of arrangements at British mines, where places of working are often at a considerable distance from the shafts. 1200 w. Ir & Coal Trds Rev—July 19, 1912. No. 34907 A.

Gasoline Motors in Mines. A. F. King. Read before the Coal Min. Inst. of W. Va. With special reference to the advantages and disadvantages of gasoline locomotives for mine haulage work. Ills. 3000 w. Mines & Min—Sept., 1912. No. 35694 C.

Haulage System at Gray Creek Mine. F. W. Whiteside. Illustrated description of a difficult haulage problem solved by utilizing the natural features of the location. 1200 w. Mines & Min—Dec., 1911. No. 28548 C.

See also Electric Haulage, under *Mining*.

Hoisting

Mine Hoisting Systems Compared. Bruno V. Nordberg. A discussion of the factors governing the economy and efficiency of steam, air, and electric hoists. 4200 w. Eng & Min Jour—May 18, 1912. Serial. 1st part. No. 32945.

Power Consumption of Hoisting Plants. S. W. Sykes. Considers the relative economies of steam, air, and electric hoists. 3500 w. Mines & Min—Aug., 1912. Serial. 1st part. No. 34947 C.

Economical Hoisting from Great Depths (Wirtschaftliche Schachtförderung aus grossen Teufen). Moldenhauer. Graphic method of determining rope size, engine power, etc. Diagrams. Serial. 1st part. 4000 w. Glückauf—Dec. 16, 1911. No. 29714 D.

The Franklin Air-Balance Hoist. R. H. Corbett. From a paper read before the L. Superior Min. Inst. Illustrated description of this hoisting engine so designed that the descending skip compresses air which is used in combination with steam to hoist the loaded skip. 1200 w. Eng & Min Jour—Sept. 21, 1912. No. 36066.

Hoisting Engines (La Machine d'Extraction à vapeur). F. Gyseling. General description of the Bollinckx engines. Ills. and plates. 5000 w. All Industrielle—July, 1912. No. 34587 D.

Notes on the Operation of Two Winding Engines. Humphrey M. Morgans. Shows the operations as registered by a Karlik tachograph. 700 w. Inst of Min & Met, Bul. 88—Jan. 11, 1912. No. 29978 N.

Recent Developments in Hoisting Engines and Safety Contrivances (Die neuere Entwicklung der Fördermaschinenantriebe und der Sicherheitsvorrichtungen). A. Wallichs. Presents various recent improvements in engines, brakes, etc. Ills. Serial. 1st part. 2800 w. Zeit des Ver Deutscher Ing—Dec. 2, 1911. No. 29757 D.

Automatic Speed Regulation on Steam Hoisting Engines (Selbstatige Geschwindigkeitsregelung an Dampffördermaschinen). Herr Schönfeld. Describes new device operating on the drum. Ills. 2000 w. Glückauf—Feb. 24, 1912. No. 31336 D.

A New Overwind Preventer. Henry Briggs. Illustrated description of an interesting invention of J. M. Thompson, in use at the Dunnikier Colliery, England. 1500 w. Col Guard—Nov. 3, 1911. No. 28028 A.

See also Winding, under *Mining*, and Electric Hoists, under ELECTRICAL ENGINEERING, *Power Applications*.

Hoisting Buckets

Replaceable Lips for Elevator-Buckets. H. J. Maguire. Calls attention to wear on the buckets and suggests an adjustable attachments for replacing old ones. Ills. 700 w. Bul Am Inst of Min Engrs—Sept., 1912. N . 36311 F.

Gauging Hoisting Buckets in Mining Plants (Die Eichung der Fördergefässe im Bergwerksbetriebe). Herr Köbrich. Reviews of Prussian and Saxony laws governing the size and strength of mine buckets. 7000 w. Glückauf—April 27, 1912. No. 32740 D.

Hoisting Ropes

Fault Location on Mining Cables. G. B. Burrows. Read before the N. of Eng. Branch of the Assn. of Min. Elec. Engrs. Illustrates methods of procedure recommended by the writer in cases of trouble on mains. 2500 w. Ir & Coal Trds Rev—May 3, 1912. No. 32896 A.

Results of Prussian Statistics on Mine Hoisting Cables for 1910 (Ergebnisse der preussischen Statistiken der Schachtförderseile für das Jahr 1910). Fr. Herbst. Report on mine cables tending to show the longevity of cables of varying sizes for the work produced. Ills. Serial. 1st part. 6800 w. Glückauf—March 2, 1912. No. 31343 D.

The Safety of Hoisting Ropes (Der Sicherheit der Förderseile). Herr Speer. Testing methods and tables giving safe and ultimate loads for ropes and cables of various sizes and qualities. Ills. Serial. 1st part. 7500 w. Glückauf—May 11, 1912. No. 33513 D.

The Factor of Safety in Hoisting Ropes (Der Sicherheitsfaktor der Schachtförderseile). Fr. Herbst. Notes, experiments and calculations for the determination of safe stresses. Diagrams. 6300 w. Glückauf—June 8, 1912. No. 34504 D.

Hydraulic Power

Hydraulic Power on the Marquette Range. George E. Edwards. Plan, and illustrated description of the Carp River plant in northern Michigan. 2500 w. Min & Engng Wld—Aug. 24, 1912. No. 35432.

Hygiene

Miners' Phthisis: The Penalty of Neglect. Reviews the progress made in controlling this disease in various mining districts, and the precautions that should be taken. 3500 w. Min Jour—Feb. 17, 1912. No. 30790 A.

The Causes and Prevention of Miners' Nystagmus. T. Lister Llewellyn. From *Pro. of the Royal Soc.* Describes this eye trouble and gives theories of its cause. 2500 w. Col Guard—May 10, 1912. Serial. 1st part. No. 32985 A.

Objections to the Abuse of Spirituous Liquors in the Rhine-Westphalia Coal Regions (Die Bekämpfung des Missbrauchs geistiger Getrànke im rheinisch-westfälischen steinkohlenbergbau). G. A. Meyer. Objections chiefly based on account of tendencies toward premature invalidism among the miners. 4500 w. Glückauf—Jan. 20, 1912. No. 30516 D.

Inspection

Cleveland-Cliffs System of Safety Inspection. William Conibear. Explains how one company is endeavoring to solve the problem of the prevention of accidents at iron ore mines. 2500 w. Ir Trd Rev—Sept. 12, 1912. No. 35943.

Co-operative Mining Investigations in Illinois. H. H. Stoek. An account of the work done by the state in connection with the U. S. Bureau of Mines. 1500 w. Trans Can Min Inst—Vol. XV. Part I. No. 34379 N.

See also same heading, under *Coal and Coke.*

Insurance

Insurance on Mine Property. W. H. Charlton. Discusses the factors which tend to raise or lower rates. 2000 w. Eng & Min Jour—Aug. 31, 1912. No. 35687.

Labor

Why American Mines Attract Foreign Labor. Claude T. Rice. Blames mining conditions for the change to less intelligent labor. 2000 w. Min & Engng Wld—Oct. 26, 1912. No. 37050.

Labor Conditions at Calumet and Hecla. Claude T. Rice. Illustrated account of the treatment and labor conditions which have made satisfied employees. 3500 w. Eng & Min Jour—Dec. 23, 1911. No. 29152.

The Iron-Ore Miner of Northern Michigan. W. J. Lauck. An account of the racial displacements, the present workers and their economic status, etc. 2500 w. Min & Engng Wld—March 9. 1912. No. 31094.

The Michigan Copper-Mine Worker of Today. W. J. Lauck. An account of the economic condition of the mine-workers and their characteristics. 1700 w. Min & Engng Wld—Nov. 18, 1911. No. 28156.

Land Laws

The Mineral Land Laws and Their Defects. George Otis Smith. From the annual report of the Director of the U. S. Geol. Survey. Also editorial. Discusses proposed amendments and their applications. 6000 w. Min & Sci Pr—Jan. 13, 1912. No. 29696.

Mineral Land Laws and the Geological Survey. George Otis Smith. A reply to charges made against the administration of the mineral-land laws. 3000 w. Min & Engng Wld—Oct. 26, 1912. No. 37048.

The Mineral Land Laws of the United States. James Douglas. Excerpt from an address delivered before the Roy. Soc. of Arts. 3500 w. Min & Sci Pr—Dec. 23, 1911. No. 29249.

Shall Our Public Lands be Leased or Sold? E. R. Buckley. Also editorial. Explains the follies of the leasing systems hitherto proposed, and discusses conservation and the problem of waste. 10000 w. Min & Engng Wld—Jan. 6, 1912. No. 29480.

Recent Legislation in Relation to Land and Mines. Alexander Smith. Read before the Inst. of Min. Engrs. Deals especially with recent British legislation regarding finance and taxation. 3500 w. Col Guard—Sept. 13, 1912. No. 36260 A.

Laws

A Discussion of Mining Law. H. V. Winchell. Read before the Can. Min. Inst. Considers features of mining laws in general and of the United States in particular. 6500 w. Eng & Min Jour—March 9, 1912. No. 31104.

Birth of the American Mining Act. H. W. MacFarren. Explains the conditions under which was passed the first mining act of 1866 relating to lode claims, the second act of 1870 relating to placer claims, and the third and final act of 1872 superseding the acts of 1866 and 1870. Serial. 1st part. 5500 w. Min & Sci Pr—April 13, 1912. No. 32167.

The Prospector and the Mining Law. T. F. Van Wagenen. Discusses the ends to be secured in mining laws, with especial reference to inducements and protection. 3000 w. Min & Sci Pr—May 18, 1912. No. 33058.

Revision of the Mining Laws. F. J. H. Merrill. Considers the four important questions given in a letter issued to the members of the Min. & Met. Soc. of Am. by the Committee on Mining Laws. 2000 w. Min & Sci Pr—June 1, 1912. No. 33477.

Proposed Revision of Alaskan Mining Laws. F. Lynwood Garrison. Gives the report of the committee of the Min. & Met. Soc., and extracts from the address of W. L. Fisher, with critical remarks. 3500 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29561 C.

1911 Bituminous Mining Law of Pennsylvania. An analysis of the portions of the law which will increase the cost of mining. 3300 w. Mines & Min—April, 1912. No. 31740 C.

Origin and History of Mining Locations in Mexico. D. A. Richardson. Information concerning the mining laws, past and present. 1800 w. Min & Engng Wld—Feb. 10, 1912. No. 30367.

Extent of Mining Titles Under the Mexican Law. D. A. Richardson. An explanation of the Mexican law affecting mining titles. 3500 w. Min & Engng Wld—March 30, 1912. No. 31690.

Canadian Coal-Mining Laws. Aims to give a complete list, so far as ascertainable. 2500 w. Col Guard—April 26, 1912. No. 32842 A.

Mining Law in Nigeria. C. S. Herzig. A critical review of the general provisions of the law. 3500 w. Min Mag—July, 1912. No. 34728 B.

Australian Mining Laws. A. Montgomery. Extract from reply to a circular letter of the committee of the M. & M. Soc. of Amer. on revision of the American Land Law. 2500 w. Min & Sci Pr—Aug. 3, 1912. No. 35081.

Low-Pressure Turbines

See Turbines, under MECHANICAL ENGINEERING, *Steam Engineering*.

Machinery

Ore and Coal-Mining Machinery. C. A. Tupper. Considers its similarity and what each branch of the industry owes the other for its development. 2200 w. Mines & Min—March, 1912. No. 30963 C.

Management

Scientific Coal Mine Management. By Sim, and W. H. Reynolds. Describes three devices by the use of which knowledge of working conditions can be had daily. 2000 w. Mines & Min—March, 1912. No. 30965 C.

Metallography

Apparatus for Metallography. Carle R. Hayward. Describes an electric heating-furnace, a grinding and polishing machine, and a device for mounting specimens, which are used in the Mass. Inst. of Tech. Ills. 1800 w. Bul Am Inst of Min Engrs—Dec., 1911. No. 29086 F.

The Universal Metalloscope—A Perfected Microscope for the Examination of Metals. Albert Sauveur. Illustrated detailed description. 2500 w. Bul Am Inst of Min Engrs—Dec., 1911. No. 29085 F.

Methods

Mining Practices Compared. V. F. Stanley Low. Gives the author's impressions of mining and milling methods noted at various mining centers. 2500 w. Min Mag—July, 1912. No. 34729 B.

European Mine Practice Compared with American. Erskine Ramsay. Abstract of paper read before the Alabama Coal Op. Assn. A comparison based on information obtained during a recent European trip. 3500 w. Min & Engng Wld—Aug. 24, 1912. No. 35434.

Modern Mining Practice vs. Early-Day Methods. William H. Storms. Discusses methods used and gives a proposed scheme. Ills. 2500 w. Min & Engng Wld—Dec. 30, 1911. No. 29271.

Mining Practice in Pioneer District of Iron Range. Reviews the section in Wisconsin and the lessons to be learned from this iron-mining district. Ills. 2000 w. Min & Engng Wld—April 27, 1912. No. 32446.

Methods of Handling Running and Swelling Ground. Harold Lakes. Illustrates and describes methods used in this novel work. 1000 w. Min Wld—Dec. 9, 1911. No. 28728.

Method of Supporting Mine Roofs. A method, patented by William Griffith, of blasting down roof and blasting up floor to form a dam, then filling back of dam. Ills. 2000 w. Mines & Min—Dec., 1911. No. 28552 C.

The Action and Control of Differently Constituted Coal Roofs. W. H. Hepplewhite. Read before the Midland Co.'s Inst. of Engrs. Discusses the action of differently constituted roofs, line of cleavage, control, etc. With general discussion. 6500 w. Ir & Coal Trds Rev—Dec. 15, 1911. No. 29197 A.

Methods Used in Mining Underground Wide Lodes or Masses. J. Bowie Wilson. General description of the caving system, the rill system, the shrinkage system, and flat back slice and fill system. 4500 w. Aust Min Stand—Feb. 29, 1912. Serial. 1st part. No. 31808 B.

Block Caving and Sub-stoping. Illustrates and describes systems employed at Tobin mine, Mich., to meet special conditions. 1000 w. Mines & Min—June, 1912. No. 33365 C.

Improvements in the Caving System. Charlton Dixon. Suggestions for the more economical mining and treatment of the brown ores of Virginia by this system. 1800 w. Mines & Min—Aug., 1912. No. 34949 C.

The Sublevel Stoping Method. F. W. Speer. Detailed description of this method, used with advantage for small deposits. Ills. 2000 w. Eng & Min Jour —June 15, 1912. No. 33732.

The Hancock Con. Mine, Mich., and Its Equipment. Warren Aikens. Illustrated account of this copper mine and the methods of operation employed in it. 1700 w. Min & Engng Wld—April 13, 1912. No. 31970.

The Quincy Mine, Mich., from Stope to Smelter. George E. Edwards. Illustrated description of one of the oldest copper properties and its economical methods. 2000 w. Min & Engng Wld—April 20, 1912. No. 32238.

Top-Slicing Methods at the Caspian Mine, Mich. William A. McEachern. Read before the L. Superior Min. Inst. Describes this method as applied. Ills. 700 w. Min & Engng Wld—Jan. 20, 1912. No. 29869.

Brown Hematite Mining in Virginia. Charlton Dixon. Illustrates and describes the sub-level and carrying system of mining. 1500 w. Mines & Min—April, 1912. No. 31744 C.

The Miami, Okla., Mining Camp. C. H. Plumb. An account of early prospecting and mining methods at this lead and zinc camp. Map. 1200 w. Mines & Min—May, 1912. No. 32544 C.

Mine No. 3, Saline County Coal Co. Oscar Cartlidge. Illustrates and describes a development in So. Illinois, showing method of fireproof construction of shaft, of handling cars, and mining. 2500 w. Mines & Min—Feb., 1912. No. 30218 C.

Notes on Mining at Tonopah. Claude T. Rice. Describes methods used in mining both wide and narrow veins. 2200 w. Eng & Min Jour—Dec. 16, 1911. No. 29004.

Notes on the Liberty Bell Mine. Charles A. Chase. Describes this gold and silver mine in Colorado, its equipment, operation, development, metallurgical practice, and some results obtained. Ills. 13500 w. Bul Am Inst of Min Engrs—Dec., 1911. No. 29087 F.

Operations at the Wellington Mine, Breckenridge. Arthur Lakes, Sr. Illustrates and describes the zinc-lead mine in Colorado and its development. 2500 w. Min & Engng Wld—Dec. 23, 1911. No. 29154.

New Zealand and Nevada Mining Methods Compared. F. C. Brown. A comparison between methods and conditions. 1600 w. Min & Sci Pr—Jan. 13, 1912. No. 29698.

Mexico

Conditions in Mexico. T. Lane Carter. Remarks on the political conditions and the effect on the mining industry. Map. 2200 w. Min Mag — May, 1912. No. 33100 B.

Mining Problems at Santa Gertrudis. W. G. Matteson. Discusses labor, water, and timbering. Ills. 3500 w. Eng & Min Jour—Sept. 21, 1912. No. 36065.

Mining Methods at Nacozari, Sonora, Mexico. D. C. Livingston. Describes this copper ore deposit and the methods used. Ills. 2000 w. Bul Am Inst of Min Engrs —Sept., 1912. No. 36310 F.

Mine Air

Notes on the Analyses of Mine Air Conducted at the Lewis Merthyr Consolidated Collieries, Limited, Trehafod. J. W. Hutchinson. From a paper read before the S. Wales Inst. of Engrs. Deals with methods used and discusses results obtained. 3500 w. Col Guard—July 19, 1912. No. 34891 A.

New Apparatus for Sampling Air for Dust. E. J. Laschinger. Illustrated description of the apparatus designed by the author, and its use. 2500 w. Jour Chem, Met, & Min Soc of S Africa—May, 1912. No. 34709 E.

The Estimation of Carbon Dioxide in Mine Air. T. Bryson. Brief description of simple methods used. Ills. 1000 w. Col Guard—Jan. 26, 1912. No. 30315 A.

The Examination and Physiological Action of Pathogenic Mine Atmospheres, with Considerations Governing the Use of Breathing Apparatus. Edwin M. Chance. Discusses only atmospheres likely to be found in mines, methods of analysis of mine air, the effects, and related subjects. 9500 w. Jour Fr Inst—Nov., 1911. No. 28277 D.

Mine Cars

Determination of Frictional Resistance of Mine Cars. G. W. Hamilton. Shows the importance of such information in connection with haulage problems, and explains methods of determining. 1500 w. Elec Jour—May, 1912. No. 33208.

Mine Fires

Fires in Metalliferous Mines. George J. Young. Considers plans for fire-prevention and fire-fighting in mines. Ills. 7500 w. Bul Am Inst of Min Engrs—Oct., 1912. No. 37130 F.

Mine Lamps

Testing of Safety Lamps. Gives text of the report of the Departmental Committee on the testing of miner's safety lamps, describing the lamp testing station and apparatus, and the proposed official tests. Also editorial. Ills. 4800 w. Col Guard—Sept. 13, 1912. No. 36261 A.

Electric Lamps for Miners. Illustrates and describes successful lamps in the Home Office competition. 2500 w. Ir & Coal Trds Rev—Aug. 23, 1912. Serial. 1st part. No. 35761 A.

The "Ceag" Miner's Electric Lamp. Illustrated description of the winner of the £600 prize. 1000 w. Col Guard—Aug. 23, 1912. No. 35752 A.

The "Stack" Miner's Electric Lamp. Brief illustrated description of a lamp awarded a prize by the Home Office. 600 w. Col Guard—Aug. 30, 1912. No. 35884 A.

Hailwood's Patent Electric Miners' Lamp. Illustrations and particulars of a lamp recently placed on the market. 1200 w. Col Guard—July 26, 1912. No. 35161 A.

A New Electric Miners' Lamp. D. B. Rushmore. Briefly reviews kinds of lamps used, and describes a new lamp recently developed by the General Electric Co. Ills. 2500 w. Bul Am Inst of Min Engrs—July, 1912. No. 34850 F.

Mine Locomotives

Gathering by Electric Mine Locomotives. G. W. Hamilton. Gives questions of importance in collecting needed information as to conditions to be met. 1500 w. Elec Jour—Sept., 1912. No. 36046.

German Electric Mine Lacomotives. A. Gradenwitz. Illustrates locomotives used and describes the general practice in German mines. 1600 w. Eng & Min Jour—Oct. 5, 1912. No. 36580.

Operating Features of Mine Locomotives. G. W. Hamilton. Illustrates and describes electric locomotives for this service, and discusses the conditions of service. 1200 w. Elec Jour—April, 1912. No. 32182.

Comparative Tests on Mine Locomotives (Vergleichende Untersuchungen an Grubenlokomotiven). Herrn. Bütow and Dobbelstein. The first instalment treats of locomotives operated by compressed air.

Ills. Serial. 1st part. 2800 w. Glückauf—March 23, 1912. No. 32028 D.

Mine Management

The Verona Mining Co., Palatka, Michigan. George E. Edwards. Illustrates and describes mining methods and equipment, and discusses the humanitarian aspects of management. 3000 w. Min & Engng Wld—Oct. 12, 1912. No. 36786.

See also Management, under INDUSTRIAL ECONOMY.

Electrical Symbols for Mine Maps. H. H. Clark. Description of symbols for the consideration of those interested. 1500 w. U S Bureau of Mines—Tech paper 22. No. 37060 N.

Mine Maps

Electrical Symbols for Mine Maps. H. H. Clark. Abstract of a paper read before the Coal Min. Inst. of America. Gives suggested symbols showing the methods of application and interpretation. 2000 w. Mines & Min—March, 1912. No. 30969 C.

Mine Motors

European Explosion-Proof Motors for Mines. E. W. Jansen. Illustrates and describes types. 1200 w. Elec Rev & W Elect'n—Dec. 23, 1911. No. 28908.

Mine Plants

An English Colliery Electrical Equipment. Illustrated description of the power generating plants, tipple, and hoisting cage at Clock Face Colliery. 1500 w. Mines & Min—Dec., 1911. No. 28550 C.

Penn-Mary Coal Company Plant. Illustrates and describes the tipple, combined electric and tail-rope haulage, and power plant arrangements. 2000 w. Mines & Min—Dec., 1911. No. 28547 C.

Mine Power

See Power Plants, under MECHANICAL ENGINEERING, *Power and Transmission.*

Mine Reports

Our Big Mines. An examination of their balance sheets by a mining accountant. 800 w. Aust Min Stand—Feb. 29, 1912. Serial. 1st part. No. 31807 B.

Mine Timber

See Timber, under CIVIL ENGINEERING, *Materials of Construction.*

Mine Water

Sealing Off Mine Water. Edmund B. Kirby. Considers methods of shutting off underground flows of water, especially that known as the "mud process." Ills. 3000 w. Eng & Min Jour—Nov. 18, 1911. No. 28098.

Mine Workings

Some Observations on Ancient Mine Workings in the Transvaal. T. G. Trevor. Information from observation, with descriptions of workings. Ills. 7000 w. Jour Chem, Met, and Min Soc of S Africa—Jan., 1912. No. 31271 E.

Miners' Baths

Miners' Baths and Bath Houses. George Blake Walker. Illustrates and describes recent British and Continental practice. 3000 w. Engineering Magazine—Dec., 1911. No. 28390 B.

See also Baths, under *Coal and Coke.*

Ontario

Progress at Porcupine. H. H. Johnson. Reviews present conditions in this district. Ills. 2000 w. Min Mag—Nov., 1911. No. 28378 B.

Some Notes on Porcupine. S. F. Shaw. Explains present conditions, describing the geology and the mining properties. Ills. 3000 w. Eng & Min Jour—Dec. 23, 1911. No. 29148.

Character of Ore Deposit and Probable Milling Methods at Porcupine. Louis W. Huntoon. Discusses the ore deposits and future prospects of the camp, the character of the ore, and the probable milling methods. 3500 w. Can Min Jour—Dec. 15, 1911. No. 29107.

Open Cut

Open Cut Mining. J. Bowie Wilson. Describes methods suitable for mining without special care about the size into which the material breaks, explaining the advantages. 2500 w. Aust Min Stand—Sept. 19, 1912. Serial. 1st part. No. 36827 B.

Ore Bins

Joplin Ore Bin Construction. Illustrates and describes types used. 1200 w. Eng & Min Jour—June 22, 1912. No. 33889.

Ore Carriers

See same heading, under MECHANICAL ENGINEERING, *Transporting and Conveying.*

Ore Deposits

The Genesis of Ore Deposits. Edgar K. Soper. A review of present knowledge in regard to their origin. 5000 w. Eng & Min Jour—Nov. 4, 1911. Serial. 1st part. No. 27693.

Two Phases in the Genesis of Ore Deposits. G. W. Miller. Discusses underground solutions and their value as ore carriers, and the evidences supporting such conclusions. 3500 w. Min & Engng Wld—May 25, 1912. Serial. 1st part. No. 33150.

Theories of Ore Deposition Prior to the Seventeenth Century. H. C. and L. H.

Hoover. Historical review. Ills. 5800 w. Min & Sci Pr—Oct. 5, 1912. No. 36747.

Peculiarities in the Drift. Josiah Bond. Illustrates and describes some ore deposits in which the valuable minerals occur in pay shoots in the vein. 2200 w. Eng & Min Jour—Oct. 12, 1912. No. 36787.

The Original Source of Metalliferous Ores. G. W. Miller. Presents the hypothesis considered most reasonable in accounting for ore genesis by geologic structure. 2200 w. Min & Engng Wld—March 2, 1912. No. 30992.

Is Geology a Success as a Guide to Ore Deposits? Walter Harvey Weed. An endeavor to estimate the value of geology in locating ore deposits. 1000 w. Min & Engng Wld—June 1, 1912. Serial. 1st part. No. 33394.

Magmatic Origin of Ore-Forming Solutions. C. F. Tolman. A critical review of an article by A. C. Lawson, containing an attack on the theory of magmatic waters as important factors in ore genesis. 5500 w. Min of Sci Pr—March 16, 1912. No. 31450.

The Laws of Igneous Emanation Pressure. Blainey Stevens. Considers the various pressures of emanation and their mechanical causes and effects, deducing a classification. Ills. 3000 w. Bul Am Inst of Min Engrs—April, 1912. No. 32417 F.

Physical Data of Igneous Emanation. Blainey Stevens. Considers the general physical states in which aqueous emanations may occur, the possible conditions under which mineral elements may occur in emanations, proposing classification, and outlining investigation urged. 3000 w. Bul Am Inst of Min Engrs—April, 1912. No. 32418.

Decrease of Value in Ore Shoots with Depth. F. Lynwood Garrison. Discussion of ore deposits in fissures that traverse crystalline rocks, or sedimentary rocks, where the mineral contents were deposited by filling or replacement. 5500 w. Qr Bul of Can Min Inst—Oct., 1911. No. 30051 N.

Decrease of Values in Ore. Shoots with Depth. Reginald E. Hore. Discusses deposits in Michigan and Ontario, recently studied. The copper mines in Houghton Co., Mich., and the Porcupine and Cobalt deposits. 3500 w. Can Min Jour—April 15, 1912. No. 32206.

Persistence of Ore in Depth. T. A. Rickard. On the change in technical opinion in regard to this subject; discussing the subject generally and also particular examples. 2500 w. Min & Sci Pr—Aug. 24, 1912. Serial. 1st part. No. 35600.

Contact Deposits. James F. Kemp. Information concerning such deposits, from a forthcoming book on "Types of Ore Deposits." 5000 w. Min & Sci Pr—Nov. 25, 1911. No. 28580.

Study of a Contact Metamorphic Ore-Deposit. The Dolores Mine, at Matchuala, S. L. P., Mexico. J. E. Spurr, G. H. Garrey, and Clarence N. Fenner. Description, general geology, the metamorphism, or deposition, etc., are given. 15500 w. Ec-Geol — Aug., 1912. No. 36328 D.

Literature of Ore Deposits in 1911. Walter Harvey Weed. Reviews the publications on ore deposits issued during the year. 2200 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29563 C

Gels in Ore Deposition. E. Hatschek and A. L. Simon. Report of investigations. Ills. 3500 w. Inst of Min & Met, Bul 91—April 11, 1912. No. 32337 N.

Some Features of Replacement Ore-Bodies and the Criteria by Means of which They May Be Recognized. J. D. Irving. Historical review, followed by descriptions and discussion of such deposits. Ills. 20500 w. Qr Bul of Can Min Inst—Dec., 1911. No. 30886 N.

Types of Ore Deposits—A Review. A. C. Lawson. Reviews a book consisting of a collection of papers by different authors. 3000 w. Min & Sci Pr—Feb. 3, 1912. No. 30337.

Western Portion of the Torbrook Iron Ore Deposits. Howells Fréchette. Report of surveys of this Nova Scotia field, describing the nature of the ore and the development. Ills. & Map. 2500 w. Can Dept of Mines—Bul No. 7. No. 30890 N.

The Geology and Ore Deposits of the Silver Bell Mining District, Arizona. C. A. Stewart. Describes the location, topography, geology, the rocks and their alteration, ore deposits, etc. Ills. 14500 w. Bul Am Inst of Min Engrs—May, 1912. No. 33227 F.

Notes on the Geology of the Mina Mexico Vein. Dibrell P. Hynes. Gives the location of the property, its geology, etc. The minerals of the vein are pyrite, quartz, blende, galena, calcite, and tetrahedrite. 2000 w. Ec-Geol—April-May, 1912. No. 33123 D.

Ore Handling

Steam Shovels and Ore Shipping at Bingham, Utah. H. C. Goodrich. Illustrated description of the operations at the Utah copper mine, comparing the handling of ore over the new and old lines, and giving information of interest. 2000 w. Min & Engng Wld—Dec. 2, 1911. No. 28576.

Surface Improvements at Ajax Mine. S. A. Worcester. Describes improvements at the ore- and waste-handling plant of this mine at Victor, Colo. Ills. 2200 w. Eng & Min Jour—Sept. 28, 1912. No. 36395.

See also same heading, under MECHANICAL ENGINEERING, *Transporting and Conveying.*

Ore-Reserves

The Estimation of Ore Reserves. Frank H. Probert and Roy B. Earling. Describes practice adopted at Ray, Ariz., for estimating tonnage and value of ore developed. 1500 w. Eng & Min Jour—Dec. 16, 1911. No. 29002.

A Concise Method of Showing Ore-Reserves. N. H. Emmons. Explains a method of measuring up ore in sight. General discussion. 2000 w. Bul Am Inst of Min Engrs—June, 1912. No. 34049 F.

Placers

Dry-Placer Mining Methods. Wilbur Greeley Burroughs. Describes different kinds of separating apparatus used, and the geology by the dry-placer deposits. Ills. 3000 w. Mines & Min—March, 1912. No. 30973 C.

See also Hydraulic Power, under *Mining.*

Plants

Coal Developments at Stearns, Ky. J. E. Butler. Illustrated description of the equipment and surface arrangements, and the use of an aerial tramway to transport coal across the river. 1800 w. Mines & Min—March, 1912. No. 30971 C.

The Chapin Mine of the Oliver Iron Mining Co. George E. Edwards. Illustrated description of the plant and methods used at a mine noted for its excellent management. 1200 w. Min & Engng Wld—March 2, 1912. No. 30989.

Power for Cobalt Mines, Cobalt, Ontario. Cecil B. Smith. Brief description of plants installed to furnish power for these silver mines. 1200 w. Jour Assn of Engng Socs—Jan., 1912. No. 30819 C.

Prospecting

Limonite Prospecting and Mining. Charlton Dixon. Deals with brown hematite prospecting and open-cut mining with steam shovels. Ills. 2200 w. Mines & Min—March, 1912. No. 30972 C.

Geology in the Examination of Prospects. C. A. Stewart. Shows the value of a knowledge of geology, discusses the classification of the deposit, secondary enrichment, etc. 2000 w. Min & Sci Pr—May 4, 1912. No. 32675.

Considerations Before Opening Mines. Arthur J. Hoskin. Brief discussion of legal matters, topography, transportation, climate, labor, supplies, extent of property. 3000 w. Mines & Min—June, 1912. No. 33368 C.

Locating Ore Deposits by Wireless Telegraphy. O. Trüstedt. Trans. from *Zeit. für praktische Geol.* Discusses methods and their applications to prospecting. Also editorial. 2500 w. Min & Engng Wld—June 8, 1912. No. 33636.

Quarrying

A Machine for Sawing Granite. Frank C. Perkins. Illustrated description of this granite saw and its operation in New England quarries. 1500 w. Sci Am Sup—July 27, 1912. No. 34781.

Laying Out and Blasting Large Sections in Open Quarries (Ueber Anlage und Sprengung grosser Kammerminen in Steinbrüchen). Bruno Zschokke. Describes and illustrates economic arrangement of blast holes in quarry work. Serial. 1st part. 2400 w. Schweiz Bau—Sept. 7, 1912. No. 36616 D.

Rescue Work

First-Aid Work and First-Aid Contests. E. D. Burkhard and Samuel Dean. Remarks on the value of competition in stimulating interest and the importance of organization. 2200 w. Mines & Min—Jan., 1912. No. 29290 C.

The Equipment and Work of the Fife and Clackmannan Joint Colliery Rescue Station. Robert Crawford. Read before the Scottish Branch of the Nat. Assn. of Col. Mgrs. Illustrated detailed description. 7500 w. Ir & Coal Trds Rev—Jan. 5, 1912. No. 29683 A.

Experiments with the 1910 Pneumatogen (Versuche mit dem Pneumatogen 1910). Herr Grahn. Description of the 1910 model of this breathing apparatus for mine rescue work in gaseous mines. Ills. 3500 w. Glückauf—March 2, 1912. No. 31344 D.

Mine-Rescue Service of the State of Illinois. H. H. Steek. Illustrates and describes the stations and the training given in the use of rescue-apparatus, and in rendering first aid to the injured. 2500 w. Bul Am Inst of Min Engrs—Dec., 1911. No. 29084 F.

New Rescue Station at Porth, South Wales. Illustrated description of the finely equipped station built to serve the Rhondda Valley and neighborhood. 1600 w. Ir & Coal Trds Rev—Sept. 6, 1912. No. 36009 A.

Rock Breakers

Breaking Ground Without Powder. G. E. Wolcott. A proposed method of breaking ground by driving wedges into the rock by powerful machines of the air-hammer type. 1500 w. Eng & Min Jour—May 25, 1912. No. 33084.

Ropeways

Wire Ropeway Plant at the Orconera Iron-Mines, Spain. Illustrated detailed description of a line having a capacity of 1450 ton-miles per hour. 1500 w. Engng—Oct. 27, 1911. No. 27730 A.

Sampling

Mechanical Sampling of Ores. O. Binder. Illustrates and describes devices for taking samples from large or small quantities of ore. 2000 w. Mines & Min—July, 1912. No. 34183 C.

Sampling and Valuation of Ores. A. Rzehulka. Abstract trans. from *Montanistische Runds.* Describes and discusses methods. 2000 w. Min Jour—June 29, 1912. No. 34315 A.

A System of Mine Sampling. E. F. Pelton. Detailed description of methods used by the Detroit Copper Co. 2200 w. Eng & Min Jour—Aug. 31, 1912. No. 35688.

Mine Sampling. S. F. Shaw. Describes the method in use at the Montezuma mines of Costa Rica. Ills. 1000 w. Min Mag—Dec., 1911. No. 29180 B.

See also same heading, under *Coal and Coke.*

Safety Precautions

Safety Precautions for Underground Workers in Mines (Die Versicherungspflicht der Unternehmerarbeiter auf Bergwerken). Herr Eschenbruch. Review of German inspection laws. 7000 w. Glückauf—March 16, 1912. No. 32027 D.

Sand Filling

A System of Sand Filling Used on the Rand. R. E. Sawyer. Describes a method of supplying dry sand to a shaft for filling purposes. The invention of Mr. Girdler-Brown. 1500 w. Inst of Min & Met, Bul 97—Oct. 10, 1912. No. 37056 N.

Shaft Lining

Reinforced Concrete as Applied to Mine Shafts. E. R. Jones. Abstract of paper before the Mich. College of Mines Club. Deals with the making and installation of the concrete. 2500 w. Min & Engng Wld—May 25, 1912. No. 33149.

Improved Ferro-Concrete Shaft Lining. C. Meuskens. Illustrates and describes the system introduced by W. Breil. 1000 w. Ir & Coal Trds Rev—July 5, 1912. No. 34479 A.

The Application of Reinforced Concrete in Shaft Linings in Place of Masonry (Verwendung von Eisenbeton beim Schachtbau an Stelle von Mauerwerk). Herr Elwitz. Mathematical determinations of sectional area, safe dimensions, etc. Ills. 2000 w. Glückauf—June 8, 1912. No. 34505 D.

Concrete Shaft Lining. E. R. Jones. Considers materials and properties used in making reinforced-concrete sets, and the comparative strength of concrete and timber. 2500 w. Mines & Min—Sept., 1912. No. 35700 C.

Concrete Timbering for Mine Shafts. E. R. Jones. Abstract of a paper read at Mich. College of Mines Club. Describes the concrete sets and their manufacture and use. Ills. 2500 w. Eng News—Sept. 19, 1912. No. 36096.

Steel Sets in Inclined Shafts. Walter Lyman Brown. Illustrates and describes types used in South Africa. 1200 w. Min & Sci Pr—Sept. 7, 1912. No. 35933.

Shafts

Vertical vs. Incline Shafts in Metal Mining. John Malcolm Nicol. Abstract from *Trans. of Mex. Inst. of Mines & Met.* Examines the shafts sunk in precious metal mining under four heads. 3000 w. Min & Engng Wld—March 30, 1912. No. 31688.

The Shape of a Shaft. E. Mackay Heriot. Considers rectangular, oval and circular shafts and reasons for their choice in certain districts. Ills. 2500 w. Eng & Min Jour—Dec. 30, 1911. No. 29241.

Methods of Raising a Shaft on Timber in Hard Rock. S. J. Goode. Abstracted from paper in *Pro.* of L. Superior Min. Inst. Illustrates and describes a shaft raised from the 7th level of the America mine to the 6th level where it joined the main shaft. 800 w. Engng & Con—Jan. 17, 1912. No. 29830.

The Rogers Concrete Drop-Shaft, Iron River, Michigan. P. B. McDonald. Illustrated account of the shaft and its construction. 1400 w. Min & Sci Pr—Dec. 30, 1911. No. 29373.

Shafts for American Coal Mines. R. G. Johnson. Read before the W. Va. Min.

Inst. Illustrates and describes the design and construction of modern coal-mine shafts in the United States. 4500 w. Mines & Min—Jan., 1912. No. 29298 C.

Some Interesting Cases of Shaft Sinking. John S. Franklin. Illustrated account of difficulties with water-bearing strata. 3500 w. Cassier's Mag—Feb., 1912. No. 30283 B.

Foot-Wall Shafts in Lake Superior Copper Mines. L. L. Hubbard. Read before the L. Superior Mine Inst. Calls attention to uneconomic practice and discusses phases of mine development. 2000 w. Min & Engng Wld—Sept. 28, 1912. No. 36418.

Fireproof Shaft, Vermillion Mine. A. F. Allard. Describes the concrete construction of shaft lining and bottom, and the steel sinking shoe used. Ills. 2000 w. Mines & Min—Oct., 1912. No. 36463 C.

Shaft Sinking

Record Sinking at State Mines, Witwatersrand. A. Cooper-Key. An account of the sinking of the southeast shaft, of the Gov. Gold Min. Areas Con., 233 ft. during March. 1800 w. Engng & Min Wld—June 1, 1912. No. 33396.

Cement Grout and Compressed Air in Shaft Sinking. R. C. Johnson, in *Coal Age*. Description of methods and operations. Ills. 2500 w. Compressed Air—April, 1912. No. 31921.

The Process and Cost of Shaft Sinking by the Freezing Process (Leistungen und Kosten beim Schachtabteufen nach dem Gefrierverfahren). Prof. Stegemann. Some figures obtained from mines adopting this method. 7200 w. Glückauf—March 16, 1912. No. 32026 D.

Special Rules for Shaft Sinking. Gives rules submitted by Frederick Piggott, in the course of evidence before the Royal Commission. 2000 w. Ir & Coal Trds Rev—Aug. 30, 1912. No. 35902 A.

Shaft Upraising Profitable. Lucius L. Wittich. Illustrated description of the driving a raise to surface by use of a swinging platform hanging from a cable through a bore hole. 1200 w. Mines & Min—Oct., 1912. No. 36468 C.

Shaft Sinking by Poetsch Method. Detailed description. 2500 w. Mines & Min—Nov., 1911. No. 27624 C.

Sprinkling Apparatus

Automatic Sprinkling Apparatus for the Prevention of Dust in Mines. T. Campbell Futers. Illustrated description of an automatic apparatus devised by Henry L. Baines. 500 w. Col Guard—Jan. 5, 1912. No. 29675 A.

Steam Shovel Mining

Modern Methods of Gravel Excavation. Francis J. Dennis. Describes work accomplished by large steam shovels and other devices. Ills. 3500 w. Min of Sci Pr—Aug. 3, 1912. No. 35080.

Engineering Features of Steam-Shovel Work at Bingham. H. C. Goodrich. Describes steam-shovel operations and railroad construction at the Utah Copper mine. Ills. 1500 w. Min & Sci Pr—Nov. 11, 1911. No. 28073.

See also Prospecting, under *Mining*.

Stoping

Stoping at the Calamon Mine. C. P. Corbett Sullivan. Brief description of modifications recently introduced in the methods of stoping. Ills. 2000 w. Inst of Min & Met, Bul 88—Jan. 11, 1912. No. 29979 N.

The Rill System of Stoping. J. Brown Wilson. A criticism of the system of rill stoping used in certain West Australian mines. 2500 w. Eng & Min Jour—Nov. 18, 1911. No. 28102.

Trimming Roofs of High Stopes. Claude T. Rice. Describes methods used in the lead districts of Southeastern Missouri. Ills. 1700 w. Eng & Min Jour—Oct. 5, 1912. No. 36578.

Stoping Costs

A System of Keeping Stoping Costs. Claude T. Rice. Explains methods of keeping costs used at the mines of the Goldfield Consolidated Co. 1500 w. Eng & Min Jour—Nov. 25, 1911. No. 28301.

Stripping

See Anthracite, under *Coal and Coke*.

Supplies

Packing Supplies in a Mining Region. James Davis. Illustrations and suggestions for packing supplies for transportation to inaccessible regions. 2000 w. Min & Sci Pr—March 23, 1912. No. 31614.

Surveying

Mine-Survey Notes. Discussion of the paper of George W. Riter. 2200 w. Bul Am Inst of Min Engrs—April, 1912. No. 32421 F.

Some Practical Points Regarding Mine Surveying. H. G. Henderson. Explains a simple method of leveling, and describes some miners' instruments and their use. 1000 w. Ir & Coal Trds Rev—March 29, 1912. No. 31902 A.

Timbering

Insect Damage to Mine Props and Methods of Preventing the Injury. T. E.

Snyder. Information concerning the principal types of insect injury, showing how large a percentage can be prevented. 1500 w. U S Dept of Agri, Circ 156—July 13, 1912. No. 34833 N.

Safety Through Systematic Timbering. Stephen L. Goodale. Illustrates and describes the method of mining used by the H. C. Frick Coke Co., resulting in safety and economy. 5000 w. Mines & Min—Nov., 1911. No. 27616 C.

Methods for the Preservation of Mine Timbers. G. B. McDonald. From the *Iowa Engr.* Describes and discusses the preservative methods used. 3000 w. Min & Engng Wld—May 18, 1912. No. 32955.

Tests on Some Species of N. S. Mine Timber F. H. Sexton and C. A. Hodge. Gives results of a series of tests made at the Nova Scotia Tech. College in July, 1911. 500 w. Can Min Jour—Oct. 1, 1912. No. 36563.

Timber Used in Mining Operations. H. R. MacMillan, Bruce Robertson, and Guy Boyce. Gives statistics of timber used in the mines of Canada in 1910. Ills. 3000 w. Can Min Jour—Nov. 1, 1911. No. 27679.

Timbering a Small Shaft. John T. Fuller. Describes a rapid and efficient method suited to small, or temporary, shafts. Ills. 1000 w. Mines & Min—July, 1912. No. 34186 C.

Mining by Timbering and Filling. Albert L. Toenges. Drawings and description of timbering methods and the filling system as employed in South Dakota. 3000 w. Mines & Min—Aug., 1912. No. 34944 C.

Proposed Modification of the Square Set. A. J. Moore. Describes a method of timbering by which greater resistance to uneven pressure is attained. Ills. 2500 w. Mines & Min—Dec., 1911. No. 28555 C.

Square-Set Mining at the Vulcan Mines, Michigan. Floyd L. Burr. Read before the L. Superior Min. Inst. Illustrates and describes the system as applied in these mines. 2000 w. Min & Engng Wld—Jan. 13, 1912. No. 29589.

Square-Set Mining at Vulcan Mines. Floyd L. Burr. Extracted from Pro. of L. Superior Min. Inst. Considers the adaptability of the system to mining ore bodies of irregular shapes. Ills. 2500 w. Mines & Min—May, 1912. No. 32542 C.

The Economic Aspects of Steel Mine Timbers. R. B. Woodworth. Illustrated discussion of the advantages and disadvantages of the steel forms used. 3500 w. Min & Engng Wld—March 30, 1912. No. 31691.

See also Mine Timbering, under *Coal and Coke.*

Tipples

Tipple at Delagua Mine, Colorado. A. J. Reef. Illustrates and describes novel haulage and other features of new tipple. 2200 w. Mines & Min—March, 1912. No. 30964 C.

Track Switches

Switches for Underground Electric Locomotive Traction (Die Verwendung von Stellwerken bei der elektrischen Lokomotivförderung unter Tage). Kliver. States methods of economic placement. Ills. 1750 w. Glückauf—Dec. 2, 1911. No. 29710 D.

Traction Engines

The Steam Tractor Hauling Ore in Washington. Frank C. Perkins. Illustrates a road traction engine and describes its work in hauling copper ore. 1500 w. Min & Engng Wld—Nov. 18, 1911. No. 28153.

Tunnels

Rapid Mine Tunneling in Arizona. Norman Carmichael. Detailed description of operations and report of cost. 4000 w. Eng & Min Jour—Aug. 17, 1912. No. 35246.

Unwatering

Unwatering Tresavean Mine. Cyril Brackenbury. Illustrated description of the plant used, way of overcoming difficulties and unwatering operations of this Cornish mine. 12000 w. Inst of Min & Met, Bul 88—Jan. 11, 1912. No. 29977 N.

Valuation

Notes on the Valuation of Ores and Minerals and on Metallurgical Calculations. George T. Holloway. Gives tables and notes for valuing ores and minerals, calculating recoveries from dressing and smelting operations, and other metallurgical work. 7000 w. Inst of Min & Met, Bul 90—March 14, 1912. No. 31608 N.

The Valuation of Base-Metal Mines. W. H. Goodchild. Urges the establishment of a cosmopolitan mineral statistical bureau, and discusses the principal factors to be considered in appraising value. 2000 w. Min Mag—July, 1912. No. 34727 B.

Mine Valuation and Mine Finance. H. C. Hoover. Gives a practical method of financing mines upon their initial sale. 2000 w. Min Mag—Oct., 1912. No. 37016 B.

Ore Reserves and Life Extension. Morton Webber. Discusses mine valuing, especially life extension appraisal. 4000 w. Min & Sci Pr—Oct. 19, 1912. No. 36989.

The Valuation of Mineral Properties. T. A. O'Donahue. From a paper before the S. Staffordshire and Warwickshire Inst. of Min. Engrs. Considers points of principle on which differences of opinion exist with a view to establishing uniform methods. 2500 w. Col Guard—Feb. 23, 1912. Serial. 1st part. No. 31032 A.

See also Sampling, under *Mining*, and Valuation, under INDUSTRIAL ECONOMY.

Ventilation

Facts and Theories Relating to Fans. David M. Mowat. Read before the Mining Inst. of Scotland. Considers the class of fans which produce a partial vacuum by centrifugal action, which includes all the ventilators used in Great Britain. 2500 w. Ir & Coal Trds Rev—Aug. 16, 1912. No. 35482 A.

Three-Phase Cascade Motors for Ventilator Driving at the Werne Mines (Ventilatorantrieb mit Drehstrom-Kaskadenmotor auf der Zeche Werne). Herr Zederbohm. Description of motor and results of its operation. Ills. 2800 w. Glückauf—June 15, 1912. No. 34507 D.

See also Fans, under MECHANICAL ENGINEERING, *Heating and Cooling*.

Wages

Compensation for Mine Workers. John H. Jones. Gives experience with liability insurance and workmen's compensation laws. 4000 w. Mines & Min—Dec., 1911. No. 28549 C.

Winding

Trials with Electric and Steam Winding Engines. From *Glückauf*. Report of committee appointed by three German associations for comparative determinations. 700 w. Col Guard—March 1, 1912. Serial. 1st part. No. 31142 A.

The Koepe Pulley Winder. Diagram and description of this endless rope system, discussing and comparing the endless-rope and double-rope systems. 2000 w. Ir & Coal Trds Rev—March 1, 1912. No 31158 A.

The Whiting System of Hoisting Winding. Walter Heys. From *Science & Art of Mining*. Describes arrangements for a very deep mine. 1800 w. Min & Engng Wld—April 27, 1912. No. 32447.

Prevention of Overwinding with Special Reference to the "Visor" Controller. J. Strachan. Read before the Nat. Assn. of Col. Mgrs. Discusses the subject generally, and gives an illustrated description of the "Visor" controller. 3000 w. Ir & Coal Trds Rev—April 12, 1912. No. 32287 A.

The Whitmore Brake and Overwind Prevention Gear. Illustrated description of an improved plant at the Huncoat Pit, near Accrington. Plate. 1100 w. Col Guard—Dec. 8, 1911. No. 29050 A.

See also Electric Power, and Planes, under *Coal and Coke*, and Electric Hoists, under *Mining*.

Wire Ropes

Wire Rope as Applied to Mining. Dugald Baird. Abstract of paper in the *Trans. of the Min. Inst. of Scotland*. Considers different makes of rope, their care, methods of testing, calculations, etc. 4200 w. Mines & Min—Feb., 1912. No. 30221 C.

Wire Ropes as Applied to Mining. Abstract from a paper read before the Min. Inst. of Scotland. Remarks on necessary tests, and the laying out so as to give the greatest amount of wear, etc. 1200 w. Mech Wld—Dec. 8, 1911. No. 29048 A.

Some Experiences with Winding Ropes and Cables. W. D. Lloyd. Notes referring chiefly to the working of one of the principal winding shafts at the Altofts Collieries. 3000 w. Ir and Coal Trds Rev—Aug. 2, 1912. Serial. 1st part. No. 35210 A.

MINOR MINERALS

Aluminum

The Aluminum Industry (L'Industria dell'Aluminio). Livio Cambi. Review of production throughout the world during the years from 1906 to 1910 inclusive. 2100 w. Industria—July 21, 1912. No. 35596 D.

Aluminum from Clay. Abridged from paper by Alfred H. Cowles, read before the Int. Cong. of Ap. Chem. Describes a process which produces a substitute for bauxite from cheap clays and its operation. 2300 w. Eng & Min Jour—Sept. 21, 1912. No. 36063.

Prospecting for Bauxite Aluminum Ore. W. C. Phalen. Gives information concerning the properties, tests, deposits, uses, etc. Ills. 2000 w. Min & Sci Pr—Sept. 7, 1912. No. 35934.

Aluminium. Information concerning its source, extraction, uses, etc. 2500 w. Min Jour—Sept. 7, 1912. No. 35990 A.

See also Separation, under *Ore Dressing and Concentration*.

Alunite

Alunite, a Newly Discovered Deposit Near Marysvale, Utah. B. S. Butler and Hoyt S. Gale. Explains its significance as a source of potash, describing the occurrence and giving general information of this and other deposits. Ils. 64 pages. U S Geol Surv—Bul 511. No. 29992 N.

Alunite: A New Source of Potash. Guy Elliott Mitchell. An illustrated account of newly discovered potash deposits in Utah. 1500 w. Cassier's Mag—July, 1912. No. 34909 B.

Antimony

Notes on the Collection of Precious Metals as Speiss in the Smelting of Autimonial Concentrates. G. C. McMurtry. Describes smelting operations worked out to suit peculiar circumstances. 2500 w. Inst of Min & Met, Bul. 97—Oct. 10, 1912. No. 37055 N.

Arsenic

The Arsenic Deposits at Brunton, Virginia. Frank L. Hess. Abstract from Bul. 470 E, U. S. Geol. Surv. Describes the deposits. 2000 w. Min & Engng Wld—Nov. 18, 1911. No. 28157.

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Compressing Natural Gas. E. D. Leland. Reviews the history of natural gas in the United States, and the development and installation of compressing stations, discussing related problems and giving information. General discussion. Ills. 8000 w. Pro Engrs' Soc of W Penn—June, 1912. No. 34802 D.

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Oils and Oil Testing. Charles A. Mann. Considers methods of production, methods of testing, etc. 1200 w. Wis Engr—Feb., 1912. No. 30881 C.

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The Occurrence of Tin. J. E. Carne. A description of the formations in New South Wales. 2500 w. Mines & Min—July, 1912. No. 34187 C.

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The Disintegration or "Decay" of Metallic Tin. Ernst Cohen. Abstract of paper on the "Allotropy of Metals," read before the Faraday Soc. Describes the conditions and the causes of the change in structure. Ills. 1200 w. Mech Engr—April 19, 1912. No. 32487 A.

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New Volumetric Method for Determination of Tin. Willbur W. Patrick and G. C. Wilsnack. From Jnl. of Indus & Engng. Chem. Describes the method adopted and modified method used when 5% or more of any interfering element is present. 1500 w. Min & Engng Wld—Sept. 21, 1912. No. 36090.

An Unusual Zonal Arrangement of Tin Ore in a Vein. Gilmour E. Brown. Describes an unusual deposit in Bolivia. 1500 w. Min Jour—June 15, 1912. No. 33922 A.

Alluvial Mining on Goss Moor, Cornwall. J. E. MacNamara and H. E. Fern. Illustrated description of the plant and method of working, the quality of the tinstone, and other information concerning the region. 2000 w. Min Mag—July, 1912. No. 34726 B.

A New Method of Dressing Cornish Tin Ores. Marcus Ruthenburg. Illustrated description of the Ruthenburg magnetic separator, outlining the old method used. 1200 w. Met & Chem Engng—July, 1912. No. 34172 C.

The Cornish Tin Ticketing. Harold E. Fern. A study of the method adopted by the chief producers of Cornwall for the sale of their tin concentrate. 2000 w. Min Mag—May, 1912. No. 33101 B.

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Tin Ore Dressing and Metallurgy. Illustrated description of the mining, concentrating and smelting processes in use in Australia and Tasmania. 2000 w. Mines and Min—Sept., 1912. No. 35695 C.

Mining in the Stanthorpe District. Illustrated account of the Rover tin mine, the Sundown tin mine, and the Silverspur mine, which has produced silver, gold, copper, and lead. 1300 w. Queens Gov Min Jour—Aug., 1912. No. 35980 B.

A Promising Tinfield. An account of fine properties recently discovered in Tasmania. 1000 w. Aust Min Stand—Oct. 12, 1911. No. 28007 B.

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Bolivian Tin Mining. Mark R. Lamb. An illustrated account of the inefficient mining methods, describing conditions. 2500 w. Eng & Min Jour—Aug. 10, 1912. No. 35117.

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Tin Mining in Bolivia. O. Gore Adams. Describes the mines and methods, and gives information of interest concerning this region. 3500 w. Aust Min Stand—Feb. 8, 1912. Serial. 1st part. No. 31129 B.

The Important Tin Mining Regions (Die wichtigern Zinnerzbergbaugebiete). B. Simmersbach. General résumé of the tin industry in the past ten years. 6300 w. Glückauf—Nov. 25, 1911. No. 28873 D.

The Tin Industry in 1911. Brief review of production and prices. 1200 w. Eng & Min Jour—Jan. 6, 1912. No. 29420.

Review of the World's Tin Production in 1911. Reviews the production in the various fields. 3500 w. Min & Engng Wld—Jan. 27, 1912. (Special.) No. 30082 C.

See also England, under *Miscellany*.

Tinstone

Occurrence of Tinstone in the Burnett District. Lionel C. Ball. Illustrated description of this tin-bearing area in Queensland, and its development. 4500 w. Queens Gov Min Jour—March 15, 1912. No. 32289 B.

Tungsten

Metallic Tungsten and Some of Its Applications. W. D. Coolidge. Information concerning tungsten and its properties, with discussion of some of the new applications. 3000 w. Pro Am Inst of Elec Engrs—June, 1912. No. 34062 F.

Ductile Tungsten. Abstract of a paper by C. G. Fink. Deals with applications. 800 w. Met & Chem Engng—Sept. 12, 1912. Special. No. 35977 N.

Wolfram and Molybdenite in Queensland. Lionel C. Ball. Extracts from progress reports in connection with an investigation underway. Ills. 5800 w. Queens Gov Min Jour—Oct. 14, 1911. Serial. 1st part. No. 28140 B.

The Tungsten Deposits of Boulder Co., Colorado. William E. Greenawalt. Describes the deposits of the most important tungsten mining district of the world. 2200 w. Cornell Civ Engr—Jan., 1912. No. 30040 C.

Review of the Tungsten Mining Industry in 1911. Statistics of production. 3000 w. Min & Engng Wld—Jan. 27, 1912. (Special.) No. 30083 C.

Tungsten in the Black Hills and Methods of Determination. E. H. Quinney. Abstracted from the *Pahasa Qr.* Describes these methods. 1200 w. Min & Engng Wld—July 13, 1912. No. 34445.

Utah

Some Minerals from Beaver County, Utah. B. S. Butler and W. T. Schaller. Information concerning beaverite, wurtzite, plumbojarosite, and corkite. 1800 w. Am Jour of Sci—Dec., 1911. No. 28716 D.

Vanadium

Prospecting for Vanadium. Frank L. Hess. Describes some of the vanadium minerals and their manner of occurrence. 2500 w. Min & Sci Pr—Sept. 21, 1912. No. 36342.

Vanadium—Its Ores and Uses. Thomas F. V. Curran. An account of the occurrences and applications. 3000 w. Eng & Min Jour—June 1, 1912. No. 33345.

Chemical Estimation of Uranium and Vanadium. Charles E. Griffin. Explains volumetric methods for the estimation. 2200 w. Min & Engng Wld—Aug. 10, 1912. No. 35130.

Vanadium in Pig-Iron. Porter W. Shimer. Gives results of vanadium determinations in a number of pig-irons made in the Lehigh Valley and in New Jersey. 1000 w. Bul Am Inst of Min Engrs—Aug., 1912. No. 35372 F.

The Determination of Vanadium in Vanadium and Chrome-Vanadium Steels. J. R. Cain. Points out various errors in the usual methods; describes a new method in detail. 6000 w. Bul Bureau of Stand—Oct., 1911. No. 29094 N.

A Rapid Method for the Determination of Vanadium in Steels, Ores, Etc., Based on Its Quantitative Inclusion by the Phosphomolybdate Precipitate. J. R. Cain and J. C. Hostetter. Research undertaken to determine whether or not vanadium could be completely precipitated with phosphoric acid. 20 pages. Tech Papers of Bureau of Stand, No. 8—Oct. 26, 1911. No. 34600 N.

The Extraction of Vanadium from Carnotite and Vanadiferous Sandstone Concentrates. Siegfried Fischer. Gives details of the process and considers results. 2500 w. Met & Chem Engng—Aug., 1912. No. 34978 C.

See also Foundries, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

ORE DRESSING AND CONCENTRATION

Agglomeration

Agglomeration of Fine Materials. Walter S. Landis. Lists the more important materials that have been agglomerated, and describes the processes used. 2500 w. Bul Am Inst of Min Engrs—May, 1912. No. 33229 F.

See also Briquetting, and Sintering, under *Ore Dressing and Concentration.*

Agitators

Air-Lift Agitation of Slime Pulp. E. J. Laschinger. Part of a criticism on a paper by Robert Allen. Discusses the relative merits of air and of mechanical agitation in the operation of the cyanide process. 3000 w. Mines & Min—Nov., 1911. No. 27622 C.

Amalgamation

Amalgamation Tests With Gold Ores From the Hohe Tauern (Amalgamationsversuche mit Golderzen der Hohen Tauern). R. St. Rainer. Outlines difficulties due to presence of refractory minerals. Ills. Serial. 1st part. 2800 w. Oest Zeit f Berg u Hüttenwesen—Sept. 7, 1912. No. 36604 D.

Analysis

Comparative Method of Screen Analysis. A. T. Tye. Describes the method of wet-screening analysis at Cananea, giving results of test. 1800 w. Min & Sci Pr—Sept. 14, 1912. No. 36033.

Assaying

Quick Combination Methods in Smelter Assays. A. T. French. Presents a scheme worked out by the author which seems capable of quite general application. 5500 w. Inst of Min & Met, Bul 89—Feb. 8, 1912. No. 30909 N.

Briquetting

The Schumacher Briquetting Process. Joseph W. Richards. Explains the process and illustrates and describes the Brück-Kretschle mechanical press and a complete plant. General discussion. 3500 w. Bul Am Inst of Min Engrs—May, 1912. No. 33231 F.

The Briquetting of Iron-Ores. N. V. Hansell. Considers modern methods of agglomeration for utilizing waste products. Ills. 6500 w. Bul Am Inst of Min Engrs—May, 1912. No. 33232 F.

Sintering and Briquetting of Flue-Dust. Felix A. Vogel. Explains the conditions to be complied with to recover in the blast-furnace all the values represented by the material contained in the flue-dust, and the processes applied. General discussion. Ills. 3500 w. Bul Am Inst of Min Engrs—May, 1912. No. 33280 F.

A Spanish Iron-Ore Treatment Plant. Illustrates and describes a method employed for briquetting fine iron ores without the use of a binder. 2000 w. Mines & Min—Nov., 1911. No. 27621 C.

See also Sintering, under *Ore Dressing and Concentration.*

Chilean Mill

Slow-Speed Mill in Mexican Mining Practice. J. B. Empson. Abstracts of a paper read before the Mex. Inst. of Min. & Met. Discusses the Chilean mill in Mexico. Ills. 3000 w. Min & Engng Wld—March 23, 1912. No. 31502.

The Slow Speed Chilean Mill. J. B. Empson. Excerpt from a paper before the Mex. Inst. of Min. & Met. Presents the merits of this mill, and data obtained from a specially constructed mill now in use in Siberia. 4000 w. Eng & Min Jour—Feb. 3, 1912. No. 30238.

Clancy Process

Electrolytic Difficulties in the Clancy Process. Victor Zachert. From *Trans.* of *Am. Met.* Soc. Calls attention to difficulties which will be encountered in the application of this process in practice. Discussion by A. W. Warwick. 2500 w. Min & Engng Wld—Nov. 4, 1911. No. 27701.

The Ajax Mill, Victor, Colorado. An account of the use of the Moore-Clancy process at this plant. 1200 w. Eng & Min Jour—Dec. 2, 1911. No. 28559.

Classifiers

A Study of the Comparative Efficiencies of Certain Methods of Screening and Classifying Fine Material and a Comparison of Screened with Classified Feed on the Wilfley Table. J. R. Cox, G. G. Gibbins and J. B. Potter. Ills. 14700 w. Qr Bul of Can Min Inst—Oct., 1911. No. 30052 N.

A Shaking Inclined-Screen Hydraulic Classifier. Lewis B. Skinner. Part of a paper read before the Colo. Sci. Soc., discussing the Richards pulsator classifier and describing the design of the author. Ills. 2500 w. Met & Chem Engng—June, 1912. No. 33413 C.

The Roisin and Richard Picker and Classifier for Various Materials (Trieur-Classeur pour Matières Diverses, System Ch. Roisin et J. Richard). L. Pierre-Guedon. Details of this inclined screw-roll classifier. Ills. and plate. 1600 w. Génie Civil—May 18, 1912. No. 32787 D.

See also Ore-Graders, under *Ore Dressing and Concentration.*

Concentration

Canvas Table Concentration in California. A. H. Martin. Illustrated description of the Darrow-Hambric tables. 1200 w. Eng & Min Jour—Sept. 21, 1912. No. 36064.

Re-treatment of Table Middlings. Gelasio Caetani. Considers a method of concentration by classification. 1200 w. Min & Sci Pr—April 6, 1912. No. 31922.

Concentration Analysis from Cananea Practice. Alfred Tellam. The figures given are taken from the practice of the plant at Sonora, Mexico. Flow sheet and map. 3500 w. Min Mag—April, 1912. No. 32429 B.

A Large Modern Iron Ore Concentrating Plant. H. Comstock. Illustrated description of Mill No. 3, at Mineville, N. Y. 2000 w. Ir Trd Rev—Nov. 9, 1911. No. 27750.

A Plant for the Enrichment of Pyritic Blende Concentrates. E. C. Hugon. Describes a plant recently erected in France for separating the pyrites from the blend concentrates. Ills. 3000 w. Inst of Min & Mt, Bul. 92—May 9, 1912. No. 32799 N.

Centrifugal Machines for Ore-Grading and Ore-Concentrating. Godfrey T. Vivian. Illustrates and describes a centrifugal ore-concentrator, and its operation. 1000 w. Bul Am Inst of Min Engrs—Oct., 1912. No. 37127 F.

See also Magnetic Concentration, and Separation, under *Ore Dressing and Concentration.*

Copper

The Ahmeek Mill, Hubbell, Mich. Walter R. Hodge. Illustrated description of this mill and its equipment for the production of copper. 2500 w. Eng & Min Jour—Oct. 19, 1912. No. 36898.

Costs

Costs at the Erie Mine. S. H. Brockunier. An account of a reduction of $1.29 per ton of ore mined and milled by rearrangements at this California mine. 2200 w. Eng & Min Jour—Sept. 7, 1912. No. 35814.

Crushers

Progress in Roll-Crushing. C. Q. Payne. Illustrates and describes the Frazer rolls, and gives an outline of the development of roll-crushers, and their advantages for coarse and for fine crushing. Discussion. 7500 w. Bul Am Inst of Min Engrs—June, 1912. No. 34048 F.

Heavy-Duty Crushing Rolls. S. W. Traylor. Drawings and description of an improved automatic lateral adjustment, showing its importance in fine grinding. 1500 w. Met & Chem Engng—June, 1912. No. 33418 C.

Modern Rock-Crushing Machinery. John S. Franklin. Illustrates and describes powerful crushing rolls and their applications. 4000 w. Cassier's Mag—Aug., 1912. No. 36297 B.

Edison Giant Crushing Rolls. J. F. Springer. Describes the Martinsburg (W. Va.) plant, where these crushing rolls are used. 2000 w. Min & Sci Pr—Aug. 31, 1912. No. 35788.

The Large Ore Crusher at the Biwalik Mine. Illustrated description of an electrically driven iron ore breaker which has a capacity of 1000 tons an hour. 1200 w. Ir Trd Rev—Feb. 15, 1912. No. 30429.

Types of Shaft Bearings for Gyratory Crushers. Outlines different designers' solutions of this problem. Ills. 1500 w. Engng & Con—May 29, 1912. No. 33303.

Cyanide Process

See Cyanidation, and Cyaniding Plants, under *Gold and Silver.*

Deflocculation

Deflocculation. Edward G. Acheson. Address before the London Soc. of Chem. Ind. A report of experimental research in making deflocculated graphite. 2000 w. Can Engr—Dec. 7, 1911. No. 28726.

Experiments in Deflocculation. From an address by Edward G. Acheson to the London Soc. of Chem. Ind. Gives light on the physical condition of colloid matter and slime that settles slowly or with difficulty. 1200 w. Eng & Min Jour—Dec. 30, 1911. No. 29237.

Desulphurizing

See same heading, under *Copper.*

Drying

Abrasion and Dust-Losses in Ore-Drying. Carl F. Dietz and Duke V. Keedy. Discusses the effect of the operations upon the ore itself and the recovery of the losses resulting from drying operations. 6000 w. Bul Am Inst of Min Engrs—July, 1912. No. 34849 F.

Electrostatic Separation

Electrostatic Concentration or Separation of Ores. Henry A. Wentworth. Explains the principle utilized in electrostatic separation and methods of applying. Ills. 5000 w. Bul Am Inst of Min Engrs—June, 1912. No. 34051 F.

Experimental Plant

The Experimental Ore Dressing and Metallurgical Plant of the Colorado School of Mines. Victor C. Alderson. Explains the need of such a plant and gives a detailed description of the building, equipment, and work. 4500 w. Met & Chem Engng—May, 1912. No. 32647 C.

Extraction

High-Extraction Processes in the Metallurgy of Gold and Silver. T. Lane Carter. Considers modern methods which have made possible the extraction of 90 to 94 per cent. from the ore. Ills. 7000 w. Engineering Magazine—Jan., 1912. No. 29203 B.

Treatment of Nicaraguan Gold-Ores. Henry B. Kaeding. Gives results of experiments in the treatment of the gold-bearing ores of the Pis Pis district, near the Atlantic coast. 2000 w. Bul Am Inst of Min Engrs—Dec., 1911. No. 29088 F.

A Graphic Method of Illustrating the Results of Extraction Tests. H. K. Picard. Suggests a method found particularly suitable when a large number of products result. 500 w. Inst of Min & Met, Bul 89—Feb. 8, 1912. No. 30910 N.

Filtration

Some Recent Improvements in Filtration Methods. Ernest J. Sweetland. Abstract of a paper before the Am. Chem. Soc. Illustrated description of the author's filter press for the cyanide process. 2500 w. Min & Engng Wld—April 20, 1912. No. 32240.

Notes on Bag Filtration Plants. Abstract of a paper by Anton Eilers read before the Int. Con. for Ap. Chem. Discusses the application of the bag house in two Western plants. Ills. 1500 w. Met & Chem Engng—Sept. 12, 1912. Special. No. 35979 N.

A Gravity Filter Plant. C. J. Stone. Describes a small plant in Montana, producing low-grade free-gold ore. 1600 w. Eng & Min Jour—Feb. 17, 1912. No. 30463.

See also Sand Filter, and Slimes, under *Ore Dressing and Concentration.*

Flotation Processes

Flotation of Minerals. Kenneth A. Mickle. Gives results of continued investigations upon differential gas and liquid attaching phenomena. 2000 w. Aust Min Stand—April 11, 1912. Serial. 1st part. No. 32998 B.

The Flotation of Minerals. Kenneth A. Mickle. An account of further research work. 6500 w. Eng & Min Jour —July 13, 1912. No. 34427.

The Flotation Process. J. W. Ashcroft. Describes its application to the concentration of copper ore at the Kyloe Copper Mine, New South Wales. Ills. 5000 w. Inst of Min & Met, Bul. 97—Oct. 10, 1912. No. 37054 N.

The Flotation Process, Its Development and Importance in Ore Dressing (Die Schwimmverfahren, ihre Entwicklung und Bedeutung für die Erzaufbereitung). Leo Herwegen. History of the process and description of the more important utilization of the general method. Ills. In two parts. Part I. 5600 w. Glückauf —July 27, 1912. No. 35516 D.

Tests on the Leuschner Flotation Process at the Friedrichssegen Mine (Das Schwimmaufbereitungsverfahren der Grube Friedrichssegen nach System Leuschner). Herr Holtmann. Describes this process and tabulates some results obtained by these tests. Ills. 2800 w. Glückauf—March 9, 1912. No. 32025 D.

The Leuschner Flotation Process. Gives details of a combination gas and oil flotation process for separating metallic sulphides from a non-metallic gangue. 1200 w. Eng & Min Jour—Sept. 28, 1912. No. 36392.

Fume Losses

Mineral Losses in Gases and Fume. F. G. Cottrell. Abstract from *Jour. of Ind. Engng. & Chem.* Considers mineral wastes passing out of the stacks of smelters and metal refineries. Also editorial. 3200 w. Min & Sci Pr—March 30, 1912. No. 31810.

Gold Milling

Investigation of Magnetically Separated Iron From Mill Pulp. A. McA. Johnston. Notes on the iron present and its treatment. 2500 w. Jour Chem, Met, & Min Soc of S Africa—Aug., 1912. No. 36826 E.

Recent Experiments under the Head of Treatment for Gold-Bearing Ores. Especially Pyrites (Neuere Versuche aus dem Gebiete der Aufbereitung goldhaltiger Erze, vornehmlich Pyrite). Frd. Freise. Tests on roasting, cyanide, permanganate, and the Sulman-Teed process of extraction. Serial. 1st part. 2400 w. Oest Zeit f Berg u Hüttenwesen — April 27, 1912. No. 32739 D.

Colburn-Ajax Mill, Victor, Colorado. S. A. Worcester. Illustrates and describes features of a mill using the Moore-Clancy process. 2500 w. Eng & Min Jour—April 13, 1912. No. 31961.

The Associated Mill, Manhattan. J. C. Kennedy. Illustrated description of this Nevada mill, with information concerning its operation. 2000 w. Min & Sci Pr —July 27, 1912. No. 35000.

See also South Dakota, under *Gold and Silver.*

Jigs

Joplin Hand Jig. Drawings and description of details. 1500 w. Eng & Min Jour—June 1, 1912. No. 33341.

Woodbury Slime Classifying Jig for Iron Ore. Illustrated description of a device which classifies the material into five different products. 1500 w. Ir Trd Rev—Sept. 26, 1912. No. 36348.

Jigging Unsized Ore by the Woodbury System. Edward T. Wright. Illustrated description of the Woodbury system and its application. 1100 w. Min & Engng Wld—Sept. 28, 1912. No. 36421.

Joplin Jigging Practice. Claude T. Rice. Describes the practice. 1500 w. Eng & Min Jour—May 18, 1912. No. 32943.

Joplin

Ore Dressing in the Joplin District. James L. Bruce. Illustrated analytical review of the ore treatment in this zinc-lead district. 6000 w. Eng & Min Jour—Feb. 24, 1912. Serial. 1st part. No. 30729.

Following the Ore in Joplin Mines. Lucius L. Wittich. Illustrates and describes the methods employed in the sheet ground, the disseminated ore, and the soft ground. 3500 w. Mines & Min—April, 1912. No. 31745 C.

Mining and Milling in the Joplin District. J. J. McLellan. Illustrated description of methods used in this region. 2000 w. Can Min Jour—March 1, 1912. No. 31083.

See also Jigs, under *Ore Dressing and Concentration.*

Kalgoorlie

Ore Treatment at the Associated Mine, Kalgoorlie. M. W. von Bernewitz. Describes this improved plant for treating a sulpho-telluride ore by the roasting and cyanide method. Ills. 3500 w. Min Mag —Feb., 1912. No. 30806 B.

Lead Milling

The Central Ore-Dressing Plant at Clausthal in the Harz (Die Zentral-Erzaufbereitungsanlage der Königlichen Berginspektion Clausthal im Harz). Recent improvements in this plant in this important galena-zincblende district. Ills. and Plate. Serial. 1st part. 2000 w. Oest Zeit f Berg- u Hüttenwesen—Dec. 9, 1911. No. 29708 D.

Low-Grade Mills

West End Consolidated Mill, Tonopah. J. P. Hart and H. L. Williams. Describes a 20-stamp, all-sliming, non-concentrating mill for treating low-grade silver ore. Ills. 4000 w. Eng & Min Jour—July 27, 1912. No. 34813.

Magnetic Concentration

Magnetic Concentration of Iron Ores. Henry Louis. Abstract of lecture before the W. of Scotland Ir. & St. Inst. Considers the magnetic permeability and intensity of magnetization, illustrates and describes various designs of magnetic separators and the design of plants for magnetic separation and concentration. 4000 w. Ir & Coal Trds Rev—May 24, 1912. No. 33470 A.

Magnetic Concentration of Ural Ores in Herräng, Sweden (Magnetische Anreicherung von Ural-Erzen in Herräng, Schweden). Description and results from the application of the Gröndal system. Ills. 2400 w. Stahl u Eisen—May 16, 1912. No. 33504 D.

Metallic Sulphates

The Decomposition of Metallic Sulphates at Elevated Temperatures in a Current of Dry Air. H. O. Hofman and W. Wanjukow. Report of investigations, with general review of the subject and tables of data. 13000 w. Bul Am Inst of Min Engrs—Sept., 1912. No. 36306 F.

Metallurgy

The Actual Progress of Metallurgy, other than Siderurgy in France (Progrès des Métallurgies autres que la Sidérurgie et leur état en France). L. Guillet. Review of the metallurgy of aluminum, magnesium, mercury, gold and the refractory metals. 80 pages. Mem d l Soc Ing Civ de France—Oct., 1911. No. 29804 D.

Mill Design

Progress in Mill Design. Frank E. Shepard. A review of milling practice with special reference to the design and performance of the milling equipment. 6500 w. Eng & Min Jour—March 16, 1912. No. 31204.

Milling Methods

Milling Methods at Stratton's Independence. Phillip Argall. Illustrates and describes the process in detail. 5500 w. Min Mag—Nov., 1911. No. 28377 B.

Chilean Milling in Peru. B. L. Sackett. An account of the old patio process as used for the amalgamation of silver ores in which the prototype of the modern Chilean mill was used. Ills. 2500 w. Eng & Min Jour—Nov. 11, 1911. No. 27794.

Milling the Tam O'Shanter Ore. James M. McClare. An illustrated article describing the milling methods at this Colorado lead-zinc-silver mine. 2200 w. Mines & Min—March, 1912. No. 30974 C.

Heavy Stamps Find Favor at Nevada Mines. A. H. Martin. Illustrated description of the latest development in milling practice. 1800 w. Min & Engng Wld—March 30, 1912. No. 31689.

The Nevada Wonder Mining Company's New Mill. P. E. Van Saun. The mill, its equipment and operation are illustrated and described. 2500 w. Min & Engng Wld—Nov. 11, 1911. No. 27984.

See also Low-Grade Ores, under *Gold and Silver*.

Ore-Grading

A New Form of Ore-Grader. From *L'Echo des Mines et de la Met.* States the objects to be fulfilled in the mechanical treatment of ores, and describes the machine and its advantages. 1200 w. Min Jour—March 2, 1912. No. 31137 A.

Preliminary Handling of Ore at El Tigre. J. W. Malcolmson and L. R. Budrow. Illustrated description of the plan adopted. The peculiar feature of the plant is the superimposed belts for sorting. 1000 w. Min & Sci Pr—March 16, 1912. No. 31449.

Ore Smelting

Ore Smelting in 1910 (Das Metallhüttenwesen im Jahre 1910). B. Neumann. Discussion of the industry throughout the world. Serial. 1st part. 4200 w. Glückauf —Oct. 28, 1911. No. 28452 D.

The Physicochemical Analysis of Smelting (Ueber die Physikalisch-chemischen Grundlagen des Hüttenwesens). Dr. R. Schenck. A discussion of the various chemical and physical changes undergone in the process of smelting. Ills. 4900 w. Stahl u Eisen—Oct. 26, 1911. No. 28409 D.

Ore Treatment

Federal Investigations of Ore-Treatment Problems. W. N. Searcy. Abstract of paper read before the Am. Min. Cong. Discusses some of the difficult problems that the Federal Government should solve. 2500 w. Min & EngngWld—Nov. 18, 1911. No. 28154.

Innovations in Metal and Coal Treatment (Einige neuerungen in der Erz- und Kohlenaufbereitung). Emil Sporn. Discussion of some of the recent processes for treating coal and other minerals. 2500 w. Oest Zeit f Berg- u Hüttenwesen. Nov. 4, 1911. No. 28822 D.

An Historical Note on Ore Treatment in San Juan County, Colorado. Warren C. Prosser. Notes on early silver processes, smelting, concentration, and the prospects for cyanidation. Ills. 2500 w. Met & Chem Engng—Nov., 1911. No. 27618 C.

Treatment of Broken Hill Ores. W. Poole. Read before the Sydney Univ. Engng. Soc. The present paper deals with methods of grinding and concentrating by the magnetic, the flotation, and the oil processes. Ills. 7000 w. Mines & Min—Nov., 1911. No. 27620 C.

Treatment of Broken Hill Ores. William Poole. Illustrated description of blast-furnace operations at the Port Pirie smelting works. 3500 w. Mines & Min—Jan., 1912. No. 29298 C.

Placer Concentrators

Dry Concentration of Placer Gold. F. J. H. Merrill. Describes types of concentrators used in placer mining. Ills. 2500 w. Min & Sci Pr—July 13, 1912. No. 34604.

Precipitation

The Electrical Precipitation of Suspended Particles. F. G. Cottrell. Illustrates and describes processes for the removal of suspended particles from gasses by electrical appliances. 3000 w. Cement & Engng News—April, 1912. Serial. 1st part. No. 31956.

High-Grade Bullion from Zinc-Box Precipitates. J. Boyd Aarons and Herbert Black. Abstract from the *W. Australia Chamber of Mines Monthly Jour.* Describes methods put in practice with highly satisfactory results. 2500 w. Min & Engng Wld—Nov. 11, 1911. No. 27983.

See also same headings, under *Gold and Silver*, and *Lead and Zinc*.

Reactions

Mass Action and Reaction Velocity. Harry C. Jones. Discusses the influence of mass on reaction velocity and chemical equilibrium. 3000 w. Eng & Min Jour—June 1, 1912. No. 33343.

Reduction

Notes on Absorption of Gold by Amalgamated Copper Plates, Cast Iron Retorts and Amalgam Trays. G. H. Stanley and M. Thornton Murray. Reports investigations with the object of ascertaining whether such absorption had taken place and, if so, to what extent. Ills. 2500 w. Jour Chem, Met, & Min Soc of S Africa—Dec., 1911. No. 30654 E.

Refractory Ores

See same heading, under *Gold and Silver*.

Roasting

Methods of Blast Roasting of Sulphide Ores. C. L. Bryden. Abstract of a paper read before the Engrs'. Soc. of N.-E. Penn. Reviews the different methods, their advantages and limitations. 2500 w. Min & Engng Wld—June 29, 1912. No. 34136.

The Principles of Blende Roasting. Abstract translation from an article by Dr. W. Hommel, in *Metallurgie*. Discusses the principles of roasting and the avoidance and production of zinc sulphate, and of zinc ferrite. 5000 w. Eng & Min Jour—Oct. 12, 1912. Serial. 1st part. No. 36789.

The Practice in Blende Roasting. E. Schütz. Abstract translation from *Metallurgie*. Historical review of the development of methods, with description of some furnaces employed in Europe and America. Ills. 3300 w. Eng & Min Jour—March 16, 1912. No. 31206.

Sampling

The Principles in the Practice of Sampling. E. A. Hersane. Read before the Am. Met. Soc. A discussion of accepted practice and the principles of systematic sampling. 5000 w. Min & Engng Wld—Nov. 25, 1911. No. 28307.

Sand Filter

The Caldecott Sand Filter Table. Illustrated description of this appliance. 1000 w. Eng & Min Jour—July 6, 1912. No. 34272.

Separation

A New Process for the Separation and Grading of Solids Suspended in Liquids. William J. Gee. Describes a mechanical process for separating the solid matter from the water and, in the same operation, grading it. Ills. 8500 w. Jour Soc of Arts—Jan. 26, 1912. No. 30292 A.

Some Methods of Separating Aluminum from Iron. Gordon Surr. Considers practical aspects of methods in which the aluminum and iron are first precipitated as hydrates by ammonia. 2500 w. Min & Engng Wld—April 27, 1912. No. 32448.

Dorr Thickeners as Aids in Isolating Rich Solutions. J. Leslie Mennell. Abstract of a paper read before the Mex. Inst. of Mines and Met. Gives a flow sheet and the methods of treatment, explaining the advantages claimed. 2200 w. Min & Engng Wld—March 16, 1912. No. 31232.

Silver Milling

The Mexican Mill, Virginia City, Nev. Whitman Symmes. Describes work on the Comstock Lode, the methods employed and results. Ills. 3500 w. Eng & Min Jour—Oct. 12, 1912. No. 36790.

The Treatment of Complex Silver-Ore at the Lucky-Tiger Mine, El Tigre, Sonora, Mexico. D. L. H. Forbes. Illustrated description of the new milling process and of the mill and cyanide plant. 9800 w. Bul Am Inst of Min Engrs—Aug., 1912. No. 35367 F.

Sintering

Treatment of Broken Hill Ores. W. Poole. Abstract of a paper read before the Sydney Univ. Engng. Soc. Treats of pot-sintering processes at this mine. Ills. 4500 w. Mines & Min—Dec., 1911. No. 28557 C.

The Sintering of Iron Bearing Materials. James Gayley. Illustrated description of the Dwight & Lloyd process, employing flue dust and fine ore. 1500 w. Ir Age—Jan 4, 1912. (Special.) No. 29337 D.

The Sintering of Fine Iron-Bearing Materials by the Dwight & Lloyd Process. B. G. Klugh. Discusses some of the technical details involved in the operation of the plant at Birdsboro, Pa., and of the theoretical and practical relations of this product to blast-furnace practice. Also discussion of methods. Ills. 7000 w. Bul Am Inst of Min Engrs—May, 1912. No. 33228 F.

See also Agglomeration, and Briquetting, under *Ore Dressing and Concentration.*

Sizing

The Sizing of Fine Dry Ore. Charles H. Brown. Illustrates and describes the operating difficulties in sizing machines and how they were overcome. 3000 w. Eng & Min Jour—June 29, 1912. No. 34129.

Sizing With or Without Screens. Carl F. Dietz and Dyke V. Keedy. Description and discussion of the McKesson screenless sizer, giving results of test. 3500 w. Met & Chem Engng—Nov., 1911. No. 27610 C.

Sizing, Diametric and Volumetric, with and without Screens. B. F. Rice. Explains the principles on which machines for this work have been based, and gives a comparison of results with the McKesson screenless sizer. 2000 w. Met & Chem Engng—Dec., 1911. No. 28584 C.

Slimes

Air-Lifting of Slime-Pulp. A. W. Allen. Detailed description of the method. Ills. 1800 w. Min Mag—April, 1912. No. 32432 B.

The Settling of Mill Slimes. D. L. H. Forbes. Considers the characteristics of slime and gives tests with four types, discussing results. 2500 w. Eng & Min Jour—Feb. 24, 1912. No. 30730.

Slime Filtration. George J. Young. Gives results of study and experimental work to determine some of the principles which control the filtration of slime. 8000 w. Bul Am Inst of Min Engrs—Nov., 1911. No. 28188 F.

The Parral-Tank System of Slime Agitation. Bernard Macdonald. Reviews various systems of agitation, noting their defects, and gives an illustrated description of the Parral-Tank system explaining its advantages. 5000 w. Bul Am Inst of Min Engrs—April, 1912. No. 32415 F.

The Parral Tank System of Slime Agitation. Bernard MacDonald. Illustrated description. 1500 w. Met & Chem Engng—July, 1912. No. 34177 C.

The James Diagonal-Plane Slimer. S. Arthur Krom. Illustrated description of the machine and its use. 1500 w. Bul Am Inst of Min Engrs—June, 1912. No. 34052 F.

Treatment of Low-Grade Slimes in Victoria. W. T. Nicol. Detailed description with plan of plant. 2300 w. Min & Engng Wld—Aug. 3, 1912. No. 35059.

Settling Slimes at the Tigre Mill. R. T. Mishler. Gives results of experiments and develops a formula by means of which laboratory results may be used as a basis for mill design. 3500 w. Eng & Min Jour—Oct. 5, 1912. No. 36579.

See also Agitators, under *Ore Dressing and Concentration.*

Solutions

Electrolytic Dissociation and Solution. Harry C. Jones. Discusses theories of solutions. 5500 w. Eng & Min Jour—March 30, 1912. No. 31679.

Solution and Its Importance. Harry C. Jones. Considers nine varieties of solution, and functions. 6000 w. Eng & Min Jour—April 6, 1912. No. 31826.

Further Studies in Solution. Harry C. Jones. The relation of diffusion and osmotic pressure, hydrolytic and electrolytic dissociation, precipitation, etc., are considered. 7000 w. Eng & Min Jour—April 20, 1912. No. 32225.

Stamp-Mills

Cost of Constructing Stamp-Mills. Charles T. Hutchinson. Treats in detail the elements entering into the cost. 5000

w. Min & Sci Pr—Oct. 28, 1911. No. 27659.

Reinforced Concrete for Stamp Foundations. J. P. Fuller. Notes relating to a 40-stamp mill built in Sumatra. 1000 w. Min Mag—April, 1912. No. 32430 B.

Notes on High Duty Gravity Stamp Mills. Peter N. Nissen. Illustrated detailed description of the Nissen stamp mill and its work, with comparisons and other information. Discussion. 9500 w. Jour Chem, Met, & Min Soc of S African—Oct., 1911. No. 29031 E.

Stamp Milling in 1911. Louis D. Huntoon. Review of present practice, experimental investigations, etc. 2000 w. Eng & Min Jour—Jan. 6, 1912. No. 29428.

Tailings

Treating Tailing Dumps. Describes the Stanley Classifier and its work. 1500 w. Aust Min Stand—June 6, 1912. No. 34481 B.

A Tailing Plant. Charles A. Banks. Illustrated description of a New Zealand plant, with account of some of the troubles overcome. 1500 w. Min Mag—Aug., 1912. No. 35465 B.

Tonnage

The Estimation of Tonnage. A. W. Allen. Considers existing systems used for the daily estimation of battery tonnage. 2000 w. Min & Sci Pr—Feb. 24, 1912. No. 30944.

Tube-Milling

Pebbles for Tube-Milling. A. W. Allen. Calls attention to recent experimental work in England and America with road-repairing material, where the essential characteristics should be hardness and toughness. Gives results of tests. 1200 w. Min Mag—July, 1912. No. 34730 B.

Washing

Ore-Washing Plant of the Wisconsin Steel Co. C. A. Tupper. Illustrated detailed description. 2000 w. Min & Engng Wld—July 13, 1912. No. 34444.

Washing and Sorting of Small Coal. N. T. Williams. Illustrates and describes apparatus for cleansing coal, giving information of cost. 9000 w. Cassier's Mag—Nov., 1911. No. 28184 B.

Ore-Washing Plant of the Oliver Iron Mining Co. C. A. Tupper. Illustrated description of a plant with a capacity of 1000 tons per hour, erected on the shore of Trout Lake, Minn. 2000 w. Min & Engng Wld—Nov. 11, 1911. No. 27982.

The Permian Copper Ores in Texas. William B. Phillips. Discusses them from the standpoint of the brown-ore miner, proposing to treat them by washing. 1600 w. Eng & Min Jour—Dec. 16, 1911. No. 29003.

See also same heading, under *Coal and Coke.*

Zinc Concentration

Igneous Concentration of Zinc Ore. F. L. Clerc. Suggestions respecting the use of the Wetherill process in the concentration of zinc. 6500 w. Eng & Min Jour—Jan. 13, 1912. No. 29578.

RARE MINERALS

Barytes

Barytes in Missouri. Lucius L. Wittich. Illustrated description of the mineral and the conditions under which it is found, methods of mining and preparing for market. 2500 w. Mines & Min—Sept., 1912. No. 35697 C.

California

Notes on Rare Minerals from California. Austin F. Rogers. Brief descriptions of 26 specimens. 2500 w. Sch of Mines Qr—July, 1912. No. 34624 D.

Carnotite

The Concentration of Carnotite Ores, and Some Similar Ores. Siegfried Fischer. Reports tests to prove carnotite a coating on the mother mineral, and gives an outline of the treatment and tests. Ills. 2500 w. Met & Chem Engng—June, 1912. No. 33415 C.

Uranium and Vanadium from Colorado Carnotite. Alb. Benicke. Abstract translation from *Centralblatt die Hütten- und Walzwerke.* Deals briefly with processes for the recovery of uranium and vanadium contained in this mineral. 1500 w. Min & Engng Wld—Nov. 4, 1911. No. 27702.

Carnotite in Paradox Valley, Colo. Describes these deposits which are being developed for their vanadium and uranium contents. 2000 w. Eng & Min Jour—Dec. 30, 1911. No. 29242.

Carnotite Deposits in the San Rafael Swell, Utah. Frank L. Hess. Map and description of the region and the deposits. 1200 w. Min & Engng Wld—Aug. 31, 1912. No. 35717.

Ceylon

Ceylon: The Island of Jewels. Leopold Claremont. Illustrated account of the rich industry in gem-minerals. 2000 w. Sci Am Sup—July 13, 1912. No. 34364.

Chromium

Prospecting for Chromium Ore. W. C. Phalen. Information concerning the properties and tests of the mineral chromite, its occurrence, uses, etc. 2000 w. Min & Sci Pr—Sept. 28, 1912. No. 36507.

Deposits

Rare Minerals of the South. Frank L. Hess. Information concerning monazite, zircon, yttrium minerals, rutile, tin, etc. 3500 w. Mfrs' Rec — Feb. 22, 1912. (Special.) No. 30753 D.

Diamonds

Speculations Regarding the Genesis of the Diamond. Orville A. Derby. Reviews theories that have been advanced and presents a new hypothesis on its origin. 1800 w. Jour of Geol—Oct.-Nov., 1911. No. 28770 D.

History of the Diamond Fields of India and Brazil. C. Roe Gardner. Extracts from a lecture before the Min. Sec. of the Brooklyn Inst. of Arts and Sciences. 2500 w. Min & Engng Wld—Feb. 17, 1912. No. 30479.

Brazilian Carbons. J. K. Smit. Information concerning the hardest mineral found, and how to judge the value of the different varieties used for diamond drilling. 1500 w. Mines & Min—July, 1912. No. 34182 C.

The Voorspold Diamond Mine. H. S. Harger. Describes the geological conditions peculiar to this mine in South Africa. 2500 w. Mines & Min—Nov., 1911. No. 27625 C.

Diamonds in the Belgian Congo. Sydney H. Ball. Information concerning discoveries and prospecting in West Africa. Map. 1200 w. Eng & Min Jour—Feb. 3, 1912. No. 30240.

New Diamond Field Near Bloemhof, Transvaal. Information concerning this recent discovery. 1800 w. Min & Engng Wld—April 6, 1912. No. 31830.

Emeralds

Emeralds: Their Mode of Occurrence and Methods of Mining and Extraction in Colombia. Charles Olden. History and description. Ills. 4000 w. Inst of Min & Met, Bul 87—Dec. 14, 1911. No. 29974 N.

Garnet

The Garnet Deposits of Warren County, New York. William J. Miller. Describes the deposits and general geological features. 2500 w. Ec Geol—Aug., 1912. No. 36329 D.

Gems

Precious Stones in 1911. George F. Kunz. Reviews the production in the various fields. 2500 w. Eng & Min Jour—Jan. 6, 1912. No. 29417.

Geology

Outcrop of Precious Metal Veins. Frederick H. Morley. Deals with the classification of outcrops, considering the importance of bold outcrops to be greatly overestimated. Ills. 2200 w. Min & Sci Pr—Sept. 21, 1912. No. 36343.

Helium

Recent Work of the Cryogen Laboratory at Leyde (Les récents travaux du laboratoire cryogène de Leyde). M. Lamotte. Describes the process of liquifying helium. 4000 w. Rev Gen des Sciences—Dec. 15, 1911. No. 29784 D.

Molybdenum

Molybdenum. Information concerning this rare metal and its properties and uses, methods of concentration, treatment, mining, etc. 3000 w. Can Engr—Dec. 7, 1911. No. 28724.

Meteorites

See Meteorology, under *Miscellany*.

Platinum

The Direct Determination of Small Amounts of Platinum in Ores and Bullion. Frederick P. Dewey. Gives a method of precipitation from a solution by adding hydrogen sulphide in the presence of silver. 1500 w. Bul Am Inst of Min Engrs—April, 1912. No. 32419 F.

Platinum (Ueber Platin). E. Priwoznik. Review of the general physical and chemical characteristics of platinum. Serial. 1st part. 2800 w. Oest Zeit f Berg u Hüttenwesen—March 16, 1912. No. 32015 D.

Platinum. Information concerning the increase in value, the demand and diminishing ore reserve; the extraction and related matters. 2500 w. Chem Engr—Sept., 1912. No. 36234 C.

Platinum and the Platinum Group. E. de Hautpick. First of a series of articles on the varieties of platinum and related information. 1500 w. Min Jour—July 13, 1912. Serial. 1st part. No. 34711 A.

Platinum in British Columbia. Information concerning the deposits and their development. 5000 w. B C Min & Engng Rec—June, 1912. No. 35452 C.

Radium

The Origin of Radium. Frederick Soddy. From a discourse delivered at the Royal Inst. Reports results of experimental study. 3000 w. Nature—April 25, 1912. No. 32999 A.

The Origin of Radium. Frederic Soddy. From a discourse at the Roy. Inst. Reports experiments which seem to prove uranium cannot be its immediate parent. 3000 w. Sci Am Sup—June 1, 1912. No. 33287.

The Origin of Radium (L'Origine du radium). F. Soddy. Discusses the theory of atomic disintegration. Diagrams. 3600 w. Rev Gen des Sciences—May 15, 1912. No. 33595 D.

Modern Uses and Applications of Radium. Hugo Lieber. Abstract of a paper presented before the Franklin Inst. Reviews the investigations and experiments which have made the application of radium possible, and the uses to which it is now applied. 4000 w. Jour Fr Inst—Dec., 1911. No. 28791 D.

Radium Minerals of Saxony and Their Discovery. C. Schiffner. Abstract of a pamphlet published in 1911. Describes the uranium minerals found. 3000 w. Min & Engng Wld—June 15, 1912. No. 33754.

Alchemy of Today (L'Alchimie d'aujourd'hui). H.-J. Proumen. The evolution of radioactive substances. 5200 w. Rev d'Électricité—Sept., 1911. No. 28484 E.

Tourmalines

Occurrences and Uses of American Tourmalines. Alexander Spotswood. An account of the mine at Mesa Grande, San Diego Co., Cal. 1800 w. Min & Engng Wld—Dec. 23, 1911. No. 29158.

Turquoise

The Origin of Turquoise in the Burro Mountains, New Mexico. Sidney Paige. Gives known facts and deductions. 3500 w. Ec-Geol—June, 1912. No. 34023 D.

MISCELLANY

Africa

Transvaal's Future and Present-Day Production. Rowland Gascoyne. Considers the future outlook of the different minerals found—gold, diamonds, coal, tin, silver, etc. 1600 w. Min & Engng Wld—Nov. 11, 1911. No. 27986.

Mining in the Belgian Congo, West Africa, for 1911. Sydney H. Ball. A review of the past year. Maps. 5000 w. Min & Sci Pr—Jan. 20, 1912. No. 30059.

Alabama

Statistics of the Mineral Production of Alabama for 1910. Charles Arthur Abele. Compiled from Mineral Resources of the United States. 50 pps. Geol Survey of Ala—Bul 12. No. 35324 N.

Alaska

Alaska. A Much Misunderstood Territory. Frank P. McKibben. A practical proposal for constructive conservation. Ills. 1500 w. Engineering Magazine—May, 1912. No. 32347 B.

Alaska: A Condition and a Program. Walter E. Clark. Abstract of a recent address by the Governor of Alaska. 1600 w. Min & Sci Pr—Aug. 10, 1912. No. 35222.

Mining in Alaska in 1911. Alfred H. Brooks. Map and review of conditions and output. 5500 w. Eng & Min Jour—Jan. 6, 1912. No. 29429.

Geology and Mines of the Sitka District, Alaska. Adolph Knoff. Maps and description of this region. 3500 w. Min & Engng Wld—Feb. 24, 1912. Serial. 1st part. No. 30771.

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Australasia

Mining in Australasia. F. S. Mance. Reviews the production of gold, silver, lead, zinc, copper and coal. 3000 w. Eng & Min Jour—Jan. 6, 1912. No. 29440.

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Australia

West Pilbara Goldfield, Western Australia. H. P. Woodward. Information from an official report concerning some of the economic minerals in this field. 2000 w. Min Jour—Oct. 28, 1911. No. 27726 A.

Austria

Mining and Smelting Industry in Austria during the year 1910 (Die Bergwerks- und Hüttenindustrie Oesterreichs im Jahre 1910). Tabular report of the mineral production in this period. 2200 w. Glückauf—Dec. 9, 1911. No. 29713 D.

Mineral Production of Austria in 1910 (Die Bergwerksproduktion Oesterreichs im Jahre 1910). Tables of all minerals mined in Austria during the year. 4000 w. Oest Zeit f Berg- u Hüttenwesen—Nov. 11, 1911. No. 28824 D.

Balkans

Mineral Industry of the Balkans. Alphonse Muzet. Information concerning Servia and Bulgaria. Map. 1500 w. Ir & Coal Trds Rev—Nov. 24, 1911. No. 28674 A.

Bolivia

Mineral Resources of Bolivia. Carlos Sanjines. A sketch of the mineral resources that are at present attracting the attention of mining people of the United

States. Ills. 2200 w. Min & Sci Pr—March 9, 1912. No. 31174.

Brazil

Brazil as a Field for the Prospector. Alexander P. Rogers. Maps and description of the difficulties which have made the exploration almost impossible, with report of railroad construction which will make the country more accessible. 1700 w. Min & Sci Pr—Nov. 4, 1911. No. 27760.

British Columbia

British Columbia in 1911. E. Jacobs. Gives statistics of mineral production, reviewing mining districts. 4000 w. Can Min Jour—Jan. 1, 1912. No. 29375.

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Annual Report of Minister of Mines. B C. E. Jacobs. Statistics for the year 1911 showing the value of the mineral production. 3000 w. Min & Engng Wld—July 20, 1912. Serial. 1st part. No. 34688.

Mining on the Coast of British Columbia. Percy Williams. Map, illustrations, and a report of present conditions. 1500 w. Min Mag—Dec., 1911. No. 29178 B.

California

Geology of Harrison Gulch, in Shasta County, California. H. E. Kramm. Map, with detailed description. 2000 w. Bul Am Inst of Min Engrs—July, 1912. No. 34848 F.

Mining in California in 1911. Lewis H. Eddy. Reports production of the different metals, developments, etc. 1200 w. Eng & Min Jour—Jan. 6, 1912. No. 29431.

Mineral Deposits of the Sierra Nevada, California. William H. Storms. Describes the mining districts and their characteristics. 1500 w. Min & Engng Wld—Jan. 20, 1912. No. 29870.

Mines of the Southern Sierras of California and Nevada. Mark B. Kerr. Describes the geology and development of this region. Ills. 1800 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29562 C.

Canada

A General Summary of the Mineral Production of Canada During the Calendar Year 1910. John McLeish. 8500 w. Can Dept of Mines—No. 117. No. 30055 N.

Gowganda During 1911. G. M. Colvocoresses. Review of the work of the year, and indefinite remarks on the future prospects. Ills. 2500 w. Can Min Jour—April 15, 1912. No. 32205.

Annual Report on the Mineral Production of Canada. John McLeish. Report for the year 1910. 328 pages. Can Dept of Mines, No. 143. No. 33180 N.

See also name of mineral in question, or name of province in question, under MINING AND METALLURGY.

Central America

Central American Mines in 1911. T. Lane Carter. Brief review of the different republics. Map. 2000 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29572 C.

China

The Mineral Production and Resources of China. Thomas T. Read. Information concerning conditions in China, the mineral wealth and its present development, methods, production and related subjects. Maps and Ills. 13500 w. Bul Am Inst of Min Engrs—March, 1912. No. 31589 F.

Colombia

Traveling in Colombia. R. D. O. Johnson. An account of conditions, with suggestions for engineers. 4000 w. Eng & Min Jour—Dec. 30, 1911. No. 29240.

Colorado

Metal Mining in Colorado in 1911. George E. Collins. Reviews the history for the year, giving the production of the various metals and general conditions. 2500 w. Eng & Min Jour—Jan. 6, 1912. No. 29430.

Conveyors

See Coal Conveyors, and Ropeways under MECHANICAL ENGINEERING, *Transporting and Conveying.*

Crystallography

Radiometric Investigation of Water of Crystallization, Light Filters, and Standard Absorption Bands. W. W. Coblentz A study of water in minerals, describing apparatus and methods of investigation. 10800 w. Bul Bureau of Stand—Dec. 15, 1911. No. 29919 N.

Chemical Constitution and Crystalline Form (Constitution chemique et structure cristalline). L. Brunet. Discussion on the Pope-Barlow theory, demonstrating the nature of valency. Ills. 5600 w. Rev Gen des Sciences—Dec. 30, 1911. No. 29786 D.

England

Ore Mines in Cornwall and Devonshire (Der Erzbergbau in Cornwall and Devonshire). Dr. Friedensburg. Reviews production and methods in mining tin, copper, arsenic, tungsten, etc., and discusses geological formation. Diagram. 7000 w. Glückauf—June 29, 1912. No. 35506 D.

France

Iron Ore Deposits in France (Die französichen eisensteinvorkommen). Bruno Simmersbach. States location and quantity of ore produced in years 1901-1909. 2900 w. Oest Zeit f Berg- u Hüttenwesen—Nov. 11, 1911. No. 28823 D.

German Colonies

Mining in the German Colonies in the Years 1910-11 (Der Bergbau in den deutschen Schutzgebieten in Jahre 1910-11). Abstracts from official reports on industries in the colonies of Africa and the South Sea. 1500 w. Glückauf—Feb. 24, 1912. No. 31337 D.

Germany

The Growth of German Iron and Steel Associations in 25 Years (Die Entwicklung der deutschen Eisen- und Stahl-Berufsgenossenschaften in 25 Jahre). Herr Meesmann. Gives statistics of the growth of the eight associations. 3000 w. Stahl u Eisen—Jan. 4, 1912. No. 30500 D.

Mineral Production in the Lower Rhine and Westphalian Mining Districts during 1911 (Die Bergwerksproduktion des niederrheinisch-westfälischen Bergbaubezirks im Jahre 1911). Dr. Ernst Jüngst. Review of total production of ores, oils and gases, and comparison with production in 1910. 7500 w. Glückauf—May 18, 1912. No. 33517 D.

Honduras

Mineral Resources of Honduras, Central America. A. D. Akin. Information concerning the mineral riches. 3000 w. Min & Engng Wld—April 20, 1912. No. 32241.

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Mining in Idaho in 1911. Robert N. Bell. Reviews developments, new mines, etc. 2000 w. Eng & Min Jour—Jan. 6, 1912. No. 29434.

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Japan

Japan's Mineral Production. H. Foster Bain. Gives statistics for 1910, and review of the mining industry. Ils. 2500 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29568 C.

The Mining Industry of Japan. Keijero Nishio. Historical review. Ils. 14000 w. Bul Am Inst of Min Engrs—Jan., 1912. No. 29948 F.

The Fujita Company, Osaka, Japan. An illustrated account of the company's mining operations. Map. 3000 w. Far East Rev—Nov., 1911. No. 29600 N.

Junk Smelting

The Treatment of Metallic Junk. Donald M. Liddell. A general review of the junk smelting industry. Ils. 3000 w. Eng & Min Jour—March 2, 1912. No. 30977.

Laboratories

Mining and Metallurgical Laboratories at Wisconsin. Edwin C. Holden. Illustrated description. 2000 w. Wis Engr—Feb., 1912. No. 30882 C.

The Fritz Engineering and the Coxe Mining Laboratories of Lehigh University. Joseph Daniels. Illustrated descriptions. 2000 w. Bul Am Inst of Min Engrs—Feb., 1912. No. 30841 F.

Land Slides

Effects of Land Slides in Mining Regions. Arthur Lakes. Illustrates and describes some of the effects. 2000 w. Min & Engng Wld—April 20, 1912. No. 32239.

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Mines and Minerals of Macedonia. John L. Binda. Brief account of native methods and description of the principal mines. Manganese, iron, pyrite and other minerals. Ils. 1500 w. Min & Sci Pr—April 13, 1912. No. 32169.

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Mining in Madagascar. T. Draper. Map, illustrations and information. 2500 w. Min Mag—Dec., 1911. No. 29177 B.

Metallurgy

The Crystalline Constitution of Metals. Thomas A. Eastick. Discusses the influence of annealing on crystalline structure. Ils. 1500 w. Sci Am Sup—May 4, 1912. No. 32578.

Metallography and Metallurgy at the Bureau of Standards. George K. Burgess. Explains the usefulness of the Bureau in metallographic work and physical metallurgy. 2000 w. Met and Chem Engng—Aug., 1912. No. 34977 C.

Metal Markets

The London Market for Mining Shares and Metals. T. A. Rickard. Review of the past year and the events that have affected mining finance. Maps. 4500 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29557 C.

Graphic Review of Metal Markets for Year 1911. J. Chalmers Warwick. Analyzes copper, tin, and lead prices. 1800 w. Ir Trd Rev—Jan. 11, 1912. No. 29516.

Meteorology

The Obstacles to the Progress of Meteorology. Prof. Cleveland Abbe. Reviews the developments in the study of climatology and the laws that govern the atmosphere, and discusses what can be done to help meteorologists in the future of their work. 6000 w. Jour Fr Inst—Jan., 1912. No. 29924 D.

Mexico

Mining in Mexico. T. Lane Carter. An estimate of present and future conditions. Ills. 6000 w. Engineering Magazine—March, 1912. No. 30836 B.

Along Mexican Trails. Alexander J. Fraser. An interesting description of the country and the habits of the people. Ills. 6500 w. Min & Sci Pr—Nov. 4, 1911. No. 27763.

Conditions in Mexico. F. W. Oldfield. Brief description of present conditions in the mining districts since the revolution as observed during a recent visit. Ills. 3000 w. Min Mag—June, 1912. No. 33993 B.

Prospecting Conditions Found in Portions of Sonora. Harold Lakes. An account of past and present conditions. 1500 w. Min & Engng Wld—Jan. 20, 1912. No. 29867.

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Mine Caves

Mine-Caves Under the City of Scranton. Short discussion of the paper of Eli T. Connor. 1000 w. Bul Am Inst of Min Engrs—April, 1912. No. 32420 F.

Mine Repairs

See Shops, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Mine Valuation

See Valuation, under *Mining.*

Mining Industry

The Relation Between Mining and Civilization. James Ralph Finlay. Abstract of annual commencement address at Missouri Sch. of Mines. On the importance of mining products in the industrial system, their present uses, and the future outlook. 2500 w. Min & Engng Wld—June 15, 1912. No. 33752.

Mining Investments

See Investments, under INDUSTRIAL ECONOMY.

Montana

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Snowslides

Snowslides in Mining Districts of British Columbia. Arthur Lakes, Sr. Illustrates and describes snowsliding phenomena, and offers suggestions for avoiding them and lessening disasters. 2500 w. Min & Engng Wld—March 2, 1912. No. 30990.

South Dakota

Analyses of Some Rocks and Minerals from the Homestake Mine, Lead, South Dakota. W. J. Sharwood. Gives analyses showing the chemical composition of the different rocks associated with the ores, and also the minerals of ore. Ills. 1500 w. Ec-Geol—Dec., 1911. No. 30808 D.

Contribution to the Study of the Pre-Cambian Rocks of the Harney Peak District of South Dakota. Gordon S. Duncan. An account of geological phenomena noted. 4000 w. Bul Am Inst of Min Engrs—July, 1912. No. 34852 F.

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Mining Conditions in the South of Spain. Henry F. Collins. An interesting account of the country, its history, labor conditions, methods of working, etc. 4500 w. Min & Sci Pr—Jan. 6, 1912. (Special.) No. 29567 C.

Statistics

Our Mineral Statistics. A review of Part III., "Output," of the Mines and Quarries General Report and Statistics for 1910. Information concerning the year's output in Great Britain. 3000 w. Engr, Lond—Jan. 19, 1912. No. 30180 A.

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Tropics

Pioneering in the Tropics. C. M. Eye. An illustrated account of difficulties encountered in tropical mines. 3000 w. Min & Sci Pr—Sept. 21, 1912. No. 36344.

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The St. Helens Mining District. Horace V. Winchell. Gives the history of this district in the State of Washington, describing the geology. Map. 3500 w. Bul. Am Inst of Min Engrs—Oct., 1912. No. 37123 F.

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Wastes

Our Mineral Wastes; the Chemist's Opportunity. Charles L. Parsons. Abstract of address before the Am. Chem. Soc. Calls attention to waste in various fields and discusses methods of conservation. 3500 w. Min & Engng Wld—Feb. 24, 1912. No. 30770.

Notes on Mineral Wastes. Charles L. Parsons. Gives results of inquiries as to the extent of this waste. 44 pp. U S Bureau of Mines—Bul. 47. No. 36039 N.

Yukon

Conditions in the Yukon. Guy A. R. Lewington. Explains conditions in the Klondike district of Yukon territory of Canada, showing their superiority to Alaska, and describing the climate. 1000 w. Min Mag—April, 1912. No. 32431 B.

Present Outlook and Conditions in the Klondike Region. Arthur Lakes, Jr. An account of this region of the Yukon, B. C. 1500 w. Min & Engng Wld—April 27, 1912. No. 32449.

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The Cost of Workmen's Compensation to the Railways. Condensed tabulations made by Edward Bunnell Phelps on the probable cost to the community and to various industries. 1500 w. Ry Age Gaz—April 19, 1912. No. 32218.

Accidents

Accident Bulletin No. 40. Information from Accident Bulletin No. 40, of the Interstate Commerce Commission. 3500 w. Ry Age Gaz—Nov. 10, 1911. No. 27783.

The Truth About Railway Accidents. A reply to an article by Charles Edward Russell, published in the Hampton-Columbian magazine for October, entitled "Speed." 7000 w. Ry Age Gaz—Dec. 8, 1911. No. 28685.

Railroad Wrecks. D. F. Jurgensen. Considers steps that should be taken to decrease the number of preventable accidents. 4500 w. Jour Assn of Engng Socs—April, 1912. No. 33114 C.

F. C. Rice and the American Railway Association on Accidents. A statement of conditions and urging a campaign with the object of reducing accidents. 2500 w. Ry Age Gaz—June 7, 1912. No. 33496.

Safety First. Ralph C. Richards. Extracts from an address at the meeting of the Gen. Mgrs. Assn. of the S.-E., at Atlanta, Ga. 6500 w. Ry and Engng Rev—Aug. 24, 1912. No. 35453.

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Accident Regulation by the Government. C. C. McChord. Review of what the Interstate Commerce Commission has done toward reducing deaths and injuries on railways. 4500 w. Ry Age Gaz—Oct. 4, 1912. No. 36514.

A Fortunate Wreck. A letter from E. W. Summers explaining why fast passenger trains are sometimes wrecked on straight track and beneficial results therefrom. Ills. 1400 w. Ry Age Gaz—Sept. 27, 1912. No. 36387.

The Westport Wreck on the New York, New Haven and Hartford R. R. Illustrated account of the wreck occurring at noon on Oct. 3. 1600 w. Eng News—Oct. 10, 1912. No. 36757.

Lesson of the Railroad Wreck at Westport. An illustrated account, showing the peril of short crossovers. 1700 w. Sci Am—Oct. 26, 1912. No. 36964.

Cableway

A Cableway over the Suriname River on the Paramaribo Railway (Een kabalbaan over de Suriname-rivier in den spoorweg van Paramaribo naar Dam in de kolonie Suriname). F. P. Pietermaat. Description of method of transporting small cars and passengers. Ills. 600 w. De Ingenieur. Oct. 28, 1911. No. 28468 D.

Canada

Canada's Transportaion Problem. E. B. Biggar. A discussion of railway economics and problems of the service, and the subject of government ownership. 2000 w. Can Engr—Jan. 25, 1912. No. 30107.

Collisions

Report on Hoosac Tunnel Collision. Gives facts brought out in the report of Prof. William L. Puffer, who made an examination of the electrical conditions at the tunnel. 2500 w. Ry Age Gaz—June 21, 1912. No. 33874.

The Lesson of Three Collisions. Reviews the three collisions occurring in the United States within two weeks, at Wilpen, Pa., Western Springs, Ill., and Corning, N. Y., and discusses causes. 3000 w. Ry Age Gaz—July 26, 1912. No. 34822.

The Lessons of Two Recent Collisions Under the Block System. Discusses the collision on the D., L. & W. at Corning, N. Y., and on the C., B. & Q. at Western Springs station near Chicago. 2200 w. Eng News—July 25, 1912. No. 34795.

Derailments

Some Causes of Derailment on Railway-Curves. Arthur Rogers. Investigation and calculation of the deflecting forces, discussing their effect. 2500 w. Inst of Civ Engrs—No. 3907. No. 29957 N.

Dispatching

The Use of the Telephone in Railroad Service. G. K. Heyer. Outlines briefly the history of train dispatching, giving in detail the results of using the telephone in this field, illustrating and describing instruments and methods. Discussion. 6500 w. Pro Ry Club of Pittsburgh—Feb. 23, 1912. No. 32149 C.

Telephony in the Train Service of the United States (La telephonie dans le service des trains aux Etats-Unis). H. Marchand. Describes the growing use of the telephone in train despatching. Diagrams. 7500 w. L'Électricien—Jan. 13, 1912. No. 30605 D.

Economics

Economies in Railway Operation. F. E. Wynne. Shows that great saving may be affected by a careful study of operating conditions along the line. 8000 w. Pro Am Inst of Elec Engrs—Aug., 1912. No. 35376 F.

Government Regulation

Government Regulation of Railway Operation. Samuel O. Dunn. An interesting discussion of this subject, followed by general discussion. 15800 w. Pro St Louis Ry Club—Sept. 13, 1912. No. 36968.

Long Runs

Long Non-Stop Runs on Railways. Dr. A. Kuntzemüller. Examines in detail the conditions necessary and compares the records of other countries with Germany. 5400 w. Bul Int Ry Cong—June, 1912. No. 33997 G.

Operation

Government Railway Operation in France. Paul Leroy Beaulieu. Trans. from *The Economiste*. An account of the deplorable condition. 2500 w. Ry Age Gaz—May 10, 1912. No. 32695.

How an Engineering Contractor Would Run a Railroad. A. P. Greensfelder. Address. 14500 w. Pro St Louis Ry Club. April 12, 1912. No. 32189.

Regulator

Tirrill Regulator on the Mersey Railway. Illustrated detailed description, with an account of a particular application. 1700 w. Engng—Feb. 2, 1912. No. 30402 A.

Signaling

Railway-Signalling: Developments on the Great Western Railway. Alfred Thomas Blackall. With an abstract of discussion. Plates. 32500 w. Inst of Civ Engrs—No. 3931. No. 29965 N.

Operation of Switches and Signals. Sectional discussion, note of the administration of the Swedish State Ry., and note on the M. D. M. system. Ills. 31800 w. Bul Int Ry Cong—Dec., 1911. No. 30007 G.

Signaling and Interlocking. J. A. Peabody. Illustrated detailed description of the plant for the new passenger terminal of the C. & N. W. Ry. in Chicago and the success of its operation. 2 plates. 12000 w. Jour W Soc of Engrs—Dec., 1911. No. 29938 D.

The Indicative Arrangement and Location of Railway Signals. J. F. Gairns. Gives specimen locations indicating the main principles as applied on British railways. 2500 w. Bul Int Ry Cong—March, 1912. No. 31555 G.

Safety Appliances on the Mariazeller Railway (Die Sicherungsanlagen auf der Mariazeller Bahn). Robert Kratochwil. Presents description of some unusual conditions to be met by this short spur crossing the main line. Ills. 2400 w. Zeit d Oest Ing u Arch Ver—March 29, 1912. No. 32056 D.

Railway Signaling. C. E. Denney. Explains the reason for signals on a railroad, and illustrates and describes types of block signals. General discussion. 4500 w. Jour Cleveland Engng Soc—June, 1912. No. 34056 D.

Railway Signaling. Condensed article by Thomas S. Stevens, in the *Santa Fe Employees' Mag*. Explains the purposes for which signals are used. The present number reviews the past history of interlocking signals. 1600 w. Ry & Loc Engng —June, 1912. Serial. 1st part. No. 33401 C.

The Indications of Railway Fixed Signals. C. C. Anthony. A detailed explanation of fixed signals and their use. Ills. 4000 w. Sib Jour of Engng—June, 1912. No. 34027 C.

Revision of the Code of Signals (La Révisions du Code des Signaux). J. Trévières. Proposed changes relating to the safety of railway operation. 4400 w. Génie Civil—Nov. 4, 1911. No. 28859 D.

Upper Quadrant Signal in Great Britain. J. F. Gairns. Illustrated description of the system. 1000 w. Bul Int Ry Cong—Feb., 1912. (Part 2.) No. 30893 G.

Annual Report of Block Signal Board. Information from the fourth report of the block signal and train control board, issued by the Interstate Commerce Commission. 5000 w. Ry Age Gaz—Feb. 2, 1912. No. 30200.

The Rudiments of Block Systems (Eine Ergänzung am Anfangsfelde der Blocklinien). R. Edler. The Underlying principles in the control and operation of block systems in various aspects. Ills. Serial. 1st part. 4200 w. Elek u Masch—Jan. 7, 1912. No. 30520 D.

Report of the Block Signal and Train Control Board. Gives text of the fourth annual report. 9500 w. Interstate Commerce Commission—Dec. 26, 1911. No. 31285 N.

The Block Signal Board's Inspection Reports. Editorial in *The Signal Engineer* for April. A critical review. 2200 w. Ry Age Gaz—April 19, 1912. No. 32216.

Block Signal Mileage, January 1, 1912. Information from the bulletin of the Interstate Commerce Commission showing the mileage of railways in the United States with block system. 2500 w. Ry Age Gaz—May 10, 1912. No. 32694.

Block Signals on an Electric Railway. John Leisenring. Describes the signal equipment and operating methods of a large interurban system in the Middle West. Also editorial. Ills. 6500 w. Eng News—Aug. 1, 1912. No. 35037.

New Signal Rules on the New York Central. Information concerning new rules governing the operation and use of interlocking, block and special signals which went into effect Feb. 1, 1912. 1500 w. Ry Age Gaz—Aug. 16, 1912. No. 35242.

New Signals on the Pennsylvania. Describes proposed new work on the Pennsylvania. Also a sketch of what has been done by the signal department of the road during the past six years on their lines. 2500 w. Ry Age Gaz—March 8, 1912. No. 31101.

The Latest Development of the Tyer Block-Signal (Der Blockapparat von Tyer in seiner neuesten Anordnung). A. Tobler. Description and discussion of principles involved in this type of apparatus. Ills. 5000 w. Schweiz. Bauzeitung—Oct. 14, 1911. No. 28462 B.

New Electrical System of Cab Signalling. Illustrated description of the Raven electrical cab signal, introduced on the N.-E. Ry. of England for expediting train movement through fog. 1200 w. Am Engr & R R Jour—Dec., 1911. No. 28718 C.

The Use of Electricity for the Control of Railways. J. E. Sayers. Abstract of paper read before the Derby Soc. of Engrs. Describes the methods used on the Midland Railway, England, in which the telephone is extensively used. 1800 w. Elect'n, Lond—Jan. 19, 1912. No. 30157 A.

Flashing Lights for Railway Signals. Illustrates and describes the Aga flashing-light signal system, in use on some of the Swedish lines. 600 w. Ry Gaz, Lond—March 8, 1912. No. 31250 A.

Electrical Locomotive Cab Signalling. Illustrates and describes improvements introduced in the system designed by Vincent L. Raven. 1200 w. Engr, Lond—March 29, 1912. No. 31898 A.

Double-Wire Transmissions for Operating Switches and Signals on the Belgian State Railway. J. Verdegen. Ills. 2500 w. Bul Int Ry Cong—May, 1912. No. 33684 G.

New Signal Equipment on the Indianapolis & Cincinnati Road. Illustrated description of an installation of manually operated, remotely controlled car signals. 3000 w. Elec Ry Jour—June 8, 1912. No. 33628.

The Application of Electricity to Railway Cab Signalling. William H. Dammond. Diagrams and descriptions of several systems of cab signals. 1800 w. Elec Rev, Lond—June 28, 1912. No. 34308 A.

New Signal System of Washington, Baltimore & Annapolis Railroad. The features of interest are the omission of track-circuit preliminaries and consequent simplification of apparatus and operating rules. Ills. 2200 w. Elec Ry Jour—Sept. 28, 1912. No. 36409.

Cab Signal and Dispatching System. Describes a system in which the indication in the motorman's cab is continuous, changing from "clear" to "danger," and the reverse, according to conditions. 2200 w. Eng News—Aug. 29, 1912. No. 35642.

Automatic Block Signaling for Single-Track Railways. James B. Latimer. Reviews briefly the conditions and requirements, and illustrates and describes an automatic block-signal system of the C., B. & Q. R. R. 2500 w. Eng News—July 11, 1912. No. 34405.

The "Railophone" Inductive System of Automatic Signalling. Illustrated description of this system of train protection. 1800 w. Elect'n, Lond—July 12, 1912. No. 34706 A.

The Signal System of the New York, Westchester & Boston Railway. Illustrated description of the automatic block signals installed on a high-speed electric railway using alternating current. 6000 w. Elec Ry Jour—July 20, 1912. No. 34691.

Automatic Train Stops. A summary of the principal automatic train stops now in use, with notes on some of the more recent experiments. 2000 w. Ry Age Gaz—Sept. 20, 1912. No. 36069.

The Simmen System of Railway Signalling and Dispatching. Illustrated detailed description of a system in use nearly three years on the Toronto & York Radial Ry. 3000 w. Can Engr—Sept. 12, 1912. No. 35970.

The Simmen Cab Signal. Illustrated description of this system and its operation. 1200 w. Ry Age Gaz—Sept. 20, 1912. No. 36072.

Carson-Burgess Cab Signal and Automatic Train Stop. Illustrated description of an electro-automatic signal that shows whether the track is occupied for two blocks ahead or in the rear, and a train stop automatically applies the brakes. 2000 w. Ry & Engng Rev—March 30, 1912. No. 31714.

Signal Lights

Acetylene Signal Lights on Boston and Maine. Brief illustrated description. 500 w. Ry Age Gaz—Aug. 16, 1912. No. 35241.

Special Trains

The Run with the "Trent Dispatches." (January 7, 1862.) History of a run made in England, fifty years ago, when war was threatened between the United States and England over the Mason and Slidell removal from the steamer Trent. 2000 w. Ry Gaz, Lond—Jan. 5, 1912. No. 29667 A.

Speed

The Speed and Acceleration Problem. Having the characteristic curves of a locomotive, a method of accurately determining the speed and time which it will give with any assumed train for any particular section is demonstrated. 1500 w. Am Engr & R R Jour—Nov., 1911. No. 27764 C.

Railway Speed in 1911. Gives tables of British and French railway speed, with remarks. 800 w. Engr, Lond—Jan. 19, 1912. No. 30182 A.

Places Where Speed Is Reduced on Railways. Dr. Hans A. Martens. An examination of reduced-speed places, and their influence on the safety of working. 3700 w. Bul Int Ry Cong—July, 1912. No. 34734 G.

Train Control

Wireless Train Control. Frank Wyatt Prentice. Tells the story of the development of this idea. Discussion. 15000 w. Pro Cent Ry Club—May 10, 1912. No. 33810 C.

The A. B. C. System of Train Control. H. F. E. Freeland. Reprint from the *Roy. Engrs. Jour.* Detailed description of this system as used on the N. Pacific Ry. and on the Delhi Durbar Ry. 9500 w. Ry Gaz, Lond—June 21, 1912. No. 34212 A.

Trains

Corridor Trains; London, Tilbury, and Southend Railway. Plate, and illustrated description of trains for special service. 1200 w. Engng—March 29, 1912. No. 31890 A.

Train Services

The Summer Train Services. An account of the programmes of railways in Great Britain. 2000 w. Engr, Lond—July 12, 1912. No. 34720 A.

MOTIVE POWER AND EQUIPMENT

Accelerometers

The Accelerometer, and Its Application to Railway Traction Problems. Harry Egerton Wimperis. Explains the uses of the instrument and describes the principles of its action and construction. 3300 w. Inst of Civ Engrs—No. 3959. No. 37080 N.

A Direct Reading Accelerometer. Illustration and brief description of an instrument which reads acceleration and transition curve defects. 300 w. Sci Am Sup—May 4, 1912. No. 32579.

Air Brakes

Equipoise in Forces. Discusses braking power required to equal the accelerating force of a car when descending a grade. 1500 w. Ry & Loc Engng—Aug., 1912. No. 34963 C.

Piston Travel Chart. Gives a small chart showing variation in braking power due to unequal piston travel and calls attention to a shock producer over which the engineer has no effective control. 1000 w. Ry & Loc Engng—July, 1912. No. 34196 C.

I. Brake Valve and Pipe Connections. II. Broken Air Pipes with L. T. Brake. Gives view of the straight air brake valve of the L. T. equipment, and discusses methods of temporary arrangement for bringing in a train with broken air pipe. Ills. 2000 w. Ry & Loc Engng—May, 1912. No. 32531 C.

Leakage in L. T. Equipment. Suggestions for repair work. 1800 w. Ry & Loc Engng—April, 1912. No. 31748 C.

Defects of L. T. Equipment. Suggestions for locating the source of any disorder. Ills. 1800 w. Ry & Loc Engng —Oct., 1912. No. 36445 C.

The New York "L. T." Equipment. Gives a piping diagram of the New York Air Brake Co.'s "L. T." brake, with explanatory remarks. 800 w. Ry & Loc Engng—Jan., 1912. No. 29346 C.

Releasing Brakes. Discusses methods and difficulties. 2000 w. Ry & Loc Engng—March, 1912. No. 30951 C.

Brakes Failing to Release. Explains causes and remedies. 1200 w. Ry & Loc Engng—Oct., 1912. No. 36446 C.

Collecting Moisture. Discusses methods of keeping moisture out of brake pipes. 1000 w. Ry & Loc Engng—March, 1912. No. 30950 C.

The No. 3-E Control Valve. Diagrams and illustrations with description of its operation. 2000 w. Ry & Loc Engng—Nov., 1911. No. 27638 C.

Foundation Arrangement Empty and Load Brake. Discusses transportation and control of traffic on heavy grades, requisite braking power, etc. 2000 w. Ry & Loc Engng—July, 1912. No. 34195 C.

Empty and Load Brake. Views and description of the operating valves of a freight car brake. 1500 w. Ry & Loc Engng—Aug., 1912. No. 34964 C.

Empty and Load Brake Operating Valves. Diagrammatic views and description of the operation of this valve mechanism. 1500 w. Ry & Loc Engng—Sept., 1912. No. 35681 C.

Stopping Freight Trains with the Air Brake. Remarks on correct methods. 2000 w. Ry & Loc Engng—Jan., 1912. No. 29345 C.

The Regular Running of Goods Trains on Steep Gradients. A. Huberti and J. Doyen. Details of the proposed solution of the problem by the Westinghouse Co. Ills. 2400 w. Bul Int Ry Cong—March, 1912. No. 31554 G.

Terminal Brake Testing. F. B. Farmer. Explains the need of terminal tests, describing plan for brake tests on incoming trains, test plants, and plan of work required, etc. General discussion. 7500 w. Pro W Ry Club—Dec. 19, 1911. No. 30030 C.

A Recent System of Continuous Braking for Freight Trains (Nouveau Système de Freinage Continue des Trains de merchandises). M. V. Sabouret. Description of system, its advantages, applications, some trials of a recent air-brake. Ills. 12000 w. Mem Soc Ing Air de France—Feb., 1912. No. 32750 G.

Mr. H. Sabouret's New Method of Applying Continuous Brakes on Long Goods Trains. Describes the method. 3000 w. Bul Int Ry Cong—Feb., 1912. (Part 2.) No. 30894 G.

The Electro-Pneumatic Brake System for Steam Road Service. Walter V. Turner and P. H. Donovan. Illustrated detailed description of the equipment and its operation. 4000 w. Jour Fr Inst—Oct., 1912. Serial. 1st part. No. 37108 D.

See also Brake Valves, under *Motive Power and Equipment.*

Air Pumps

Air Pump Efficiency. Explains the difference between efficiency and capacity. 2500 w. Ry & Loc Engng—April, 1912. No. 31749 C.

Boiler Tubes

Care of Locomotive Boiler Tubes. Walter R. Hedeman. Gives specifications and rules. Ills. 2500 w. Am Engr—Aug., 1912. No. 34933 C.

Box Cars

The Leakage of Grain from Box Cars. Editorial discussion of the evils due to car leakage and need of tight box cars, suggesting types of construction. 1500 w. Ry Age Gaz—Nov. 24, 1911. No. 28262.

20-Ton Box Cars (Wagon Couvert de 20 T.). Installed by the *Chemins de Fer de l'est Cie.* having cabins, and the Mestre system of automatic brake setting. Ills. 13000 w. Rev Gen des Chemins de Fer —Nov., 1911. No. 28853 G.

All-Steel Box Cars. Illustrated description of cars ordered for the Bessemer & Lake Erie. 1500 w. Ry Age Gaz —March 22, 1912. No. 31462.

Defective Box Cars and Damaged Freight. Information concerning the extent of loss for which condition of equipment is responsible and how it may be reduced. Ills. 2500 w. Ry Age Gaz—April 12, 1912. Serial. 1st part. No. 31942.

New Box, Stock and Refrigerator Cars. Illustrated description of steel frame freight equipment with steel roofs, the framing being suitable for three types of cars. 2500 w. Ry Age Gaz—Oct. 4, 1912. No. 36513.

Brakes

The Design of Brake Blocks for Locomotives. Robert F. McKay. States conditions that should be fulfilled in a correct design. 1200 w. Mech Wld—Oct. 18, 1912. No. 37073 A.

Clasp Brakes for Passenger Cars. Abstract from remarks by T. L. Burton on the advantages of this arrangement which is now standard on the Reading and the Central of New Jersey. Ills. 1500 w. Ry Age Gaz—Aug. 16, 1912. No. 35239.

Automatic Brake Slack Adjusters for Steam and Electric Cars. W. H. Sauvage. Shows the destruction to rolling stock due to poorly adjusted brakes and the requirement of an automatic slack adjusted to take up the brake shoe wear. Also discussion. Ills. 10000 w. Pro N Y R R Club—May 17, 1912. No. 33809.

Hand Ratchet-Brakes (Frein a Rochet, a Main). Description of operation of Westinghouse 4-shoe brake rigging applied to bogie trucks. Ills. 2200 w. Rev Gen des Chemins de Fer—Dec., 1911. No. 29774 G.

The New Mestre Hand-Brakes on the Chemins de Fer de l'Est (Nouveaux freins a main, système Mestre, des Chemins de Fer de l'Est). Describing this type of brake for ratchet or wheel use. Ills. 3000 w. Génie Civil—March 2, 1912. No. 31411 D.

The Electro-Pneumatic Brake System for Steam Road Service. Walter V. Turner and P. H. Donovan. Explains the great value of applying electricity as the means of operating the pneumatic or compressed air brake, describing the system as applied to the subway division of the Interborough Rapid Transit Ry. of N. Y. City. Ills. 6500 w. Jour Fr Inst—Aug., 1912. Serial. 1st part. No. 35363 D.

Passenger Train Braking. Considers passenger car brakes, with reference to the "L. N." and "P. C." type. 2200 w. Ry & Loc Engng—May, 1912. No. 32532 C.

See also Air Brakes and Cars, under *Motive Power and Equipment*, and Brakes, under STREET AND ELECTRIC RAILWAYS.

Brakeshoes

Some Tests of Brakeshoes. George L. Fowler. Report of four types tested to learn their relative efficiency and cost. 6000 w. Elec Ry Jour—April 6, 1912. No. 31844.

Brake Valves

Wrongly Used Triple Valves. Explains the effect of using wrong valves, confining the discussion to freight cars. 2000 w. Ry & Loc Engng—Feb., 1912. No. 30140 C.

The Type L Brake Valve. Gives views of the N. Y. Air Brake Co.'s type L brake valve, explaining its operation. 700 w. Ry & Loc Engng—Feb., 1912. No. 30141 C.

Buffers

A New Type of Buffers for Railway Carriages (Un nuovo tipo di respintore per veicoli ferroviari). P. Baravelli. Description of the Papone buffer. Ills. 6500 w. Ann della Soc d'Ing e d Arch Ital—Sept. 1, 1911. No. 28480 E.

Cars

A New Type of Steel Passenger Car. Illustrates and describes details of the suburban cars of the New York, Westchester & Boston, embodying a simplified steel body frame. 1500 w. Ry Age Gaz—June 14, 1912. No. 33711.

New Pullman Buffet Car, South-Eastern and Chatham Railway. Views and description of fine cars recently put in service in England. 1200 w. Ry Gaz, Lond—May 17, 1912. No. 33265 A.

New Steel Cars for the New York, Westchester & Boston Railway. Illustrates and describes interesting constructional features. 3500 w. Elec Ry Jour—March 30, 1912. No. 31684.

Special Saloon for the Sudan Government Railways. Illustrated detailed description of a handsome car for official use. 1600 w. Ry Gaz, Lond—Feb. 23, 1912. No. 31023 A.

The Suburban Cars and Central-Caboose Baggage Cars of the Paris-Lyons-Mediterranean Company (Note sur les Voitures de Banlieue et les Wagons a Bagages a Guérite Intérieure Centrale de la Compagnie Paris-Lyon-Méditerranée). M. Lancrenon. Details of these cars. Ills. 2500 w. Rev Gen des Chemins de Fer—March, 1912. No. 31400 G.

High-Capacity Railway Wagons. Herbert Kelway-Bamber. Notes on the relation of wheel diameter to tractive effort, etc. 1000 w. Engng—May 24, 1912. No. 33460 A.

Fish-Belly Center Girders for Cars. Arthur E. Heffelfinger. Gives a practical method for determining the length of the cover plate and the flange angles. Also a semi-graphic method for finding the deflection at any point along the beam. 2500 w. Am Engr—March, 1912. No. 31056 C.

Automobile Car for the Chicago, Milwaukee and St. Paul. Illustrates and describes special box cars for transporting automobiles. 600 w. Ry Age Gaz—March 15, 1912. No. 31208.

Postal Cars for the Missouri Pacific Ry. Illustrated detailed description. 1200 w. Ry & Engng Rev—March 2, 1912. No. 31006.

Central of New Jersey Ice Car. Illustrated description of cars designed to meet the requirements. 700 w. Ry Age Gaz—June 7, 1912. No. 33497.

20-Ton Ballast Cars (Wagon Tombereau de 20-T.). Description of small gondola cars, with four-shoe, hand-lever brakes, worked by ratchet. 2500 w. Rev Gen des Chemins de Fer—Dec., 1911. No. 29773 G.

See also Box Cars, Mail Cars and Tank Cars, under *Motive Power and Equipment.*

Car Cleaning

Compressed-Air Cleaning on Railways. H. Jacobi. Critical comments on the faults of vacuum cleaners, with illustrated description of the process named. 2700 w. Bul Int Ry Cong—April, 1912. No. 32357 G.

Car Design

New Car for Memphis, Tenn. Illustrated description of a car having a steel underframe of novel form with malleable-iron post brackets. 800 w. Elec Ry Jour—March 2, 1912. No. 31004.

Car Heating

Alcohol Heater Car. Illustrated description of a car designed to furnish protection from freezing of perishable products. 800 w. Ry Age Gaz—June 7, 1912. No. 33499.

Heating by Steam (Note sur le Chauffage par la Vapeur). M. Bachellery. Describes the Perdrizet system of car heating as used on the Chemin de Fer du Midi, and its operation. 1700 w. Rev. Gén des Chemins de Fer—Sept., 1912. No. 36190 G.

Car Lighting

Indirect Lighting for Passenger Equipment. Illustrates and describes its use in dining cars and private cars. 600 w. Ry Age Gaz—Jan. 5, 1912. No. 29403.

Car Mileage

Car Mileage: A Suggested Alteration in the Method of Calculation. W. Wykes. 800 w. Elec Rev, Lond—Aug. 2, 1912. No. 35189 A.

Car Repairs

Car Department and Paint Shop Kinks. W. H. Wolfgang. Illustrates and describes methods and appliances. 1500 w. Ry Age Gaz—Nov. 3, 1911. No. 27691.

Repairs to Steel Cars. E. G. Gross. Short paper introducing discussion. Ills. 4500 w. Pro S & S W Ry Club—Sept., 1911. No. 27601 C.

Car Roofs

Flexible Metallic Roof for Box Cars. Illustrated detailed description of the roof and its general arrangement. 1500 w. Ry Age Gaz—Nov. 17, 1911. No. 28077.

Flexible Metallic Roof for Box Cars. Illustrated description of the Franklin flexible roof. 1200 w. Am Engr & R R Jour—Dec., 1911. No. 28721 C.

Car Tires

Automatic Tire Boring-Machine (Automatische Bandagen-Ausbohrmaschine). Otto Jacken. Description of machine for boring railway car tires as used in Germany. Ills. 3500 w. Glasers Ann—Oct. 1, 1911. No. 28408 D.

Wear of Railway Tyres. Editorial review of the report presented this year to the American Railroad Master Mechanics' Association. 2500 w. Engng—Nov. 10, 1911. No. 28129 A.

Car Wheels

Control of Mixtures for Cast Iron Car Wheels. Asa W. Whitney. Discusses the advantages of the microscope in car wheel practice and some examples of cast iron chills. Ills. 2500 w. Ir Trd Rev—March 14, 1912. No. 31173.

Control of Mixtures for Cast Iron Car Wheels. Asa W. Whitney. Discusses the advantages of the microscope in car wheel practice and remarkable examples of cast iron chill. Ills. 2500 w. Foundry—April, 1912. No. 31697.

Steel Wheels. C. G. Bacon, Jr. A discussion of standard designs and specifications, considering 21 designs, and urging the reduction to 11, giving reasons. General discussion. Ills. 12000 w. Pro W Ry Club—Feb. 20, 1912. No. 31779 C.

Couplers

Automatic Couplers on Railway Cars (Sur l'Attelage Automatique des Wagons de Chemins de Fer). J. Netter. Illustrated description of American and European types. 4000 w. Tech Mod—July 1, 1912. No. 34581 D.

The Invention of the Automatic Car Coupler. Brief history of its development. Ills. 4000 w. Eng News—Aug. 29, 1912. No. 35647.

Connectors, or, the Automatic Train Pipe Coupler Problem. J. B. Thomas. Gives an outline of a practical design of connector to meet the requirements of service. General discussion. 3000 w. Pro St Louis Ry Club—Aug. 9, 1912. No. 36041.

Denatured Alcohol

See Locomotive Fuels, under *Motive Power and Equipment.*

Driving Boxes

Repairing Locomotive Driving Boxes. E. T. Spidy. Prize paper. Illustrated detailed description of the methods used at the Winnipeg shops of the Canadian Pacific. Also editorial. 2500 w. Am Engr—June, 1912. No. 33604 C.

Repairing Driving Boxes. M. H. Westbrook. Describes methods suited for a shop operating 15 or more pits. Ills. 1500 w. Am Engr—July, 1912. No. 34265 C.

Dump-Cars

The Economy and Benefits in the Use of Air Dump-Cars on Railway Construction. Maurice E. Davis. Illustrates types, discussing their strength, stability, ease of handling, capacity, etc. General discussion. 6000 w. Jour Am Soc of Engng-Cont—June, 1912. No. 35483 C.

Dynamometer Cars

Santa Fe Dynamometer Car. H. B. MacFarland. Illustrated detailed description of a high capacity car recently placed in service on the Santa Fe. 1000 w. Ry Age Gaz—March 29, 1912. No. 31636.

Electric Traction

Is Electric Traction Coming for Main-Line Railways? I. The Operation of Steam Railroads by Electric Motors. J. B. Whitehead. II. The Advantages of Steam Over Electricity on Railroads. Arthur Curran. Introduction, with discussion of both sides. Ills. 9000 w. Cassier's Mag—March, 1912. No. 31187 B.

The Present and Future of Electric Traction (L'État Actuel et les Tendances de la Traction Électrique). M. L. Barbillion. Discusses the evolution of the mechanism of electric cars, former and present modes of operation, and the tendencies of future development. In two parts. Part I. Ills. 1800 w. Tech Mod (Supplement)—June 15, 1912. No. 34578 D.

Electric Traction and Its Progress. R. V. Macauley. The discussion is confined to American practice. Reviews the history and discusses the present standing of such lines. 5000 w. Ap Sci—July, 1912. No. 35317 C.

Intermittency: Its Effect in Limiting Electric Traction for City and Suburban Passenger Transport. William Yorath Lewis. Shows that intermittency has brought existing underground electric railways almost to the limit of their capacity, and suggests a "continuous" system. Also discusssion. 12500 w. Soc of Engrs—May 6, 1912. No. 33660 N.

Notes on the Operation of the Washington, Baltimore & Annapolis Railroad as a 1200-Volt System. John R. Hewett. On the economies effected and the satisfactory behavior and endurance of the apparatus, according to the amount of the service rendered on the road. 1500 w. Gen Elec Rev—July, 1912. No. 34232 C.

Notes on the Wheeling (W. Va.) Traction Company. Illustrates and describes improvements and extensions. 3500 w. Elec Ry Jour—Jan. 27, 1912. No. 30089.

Overhead Construction on the Dessau-Bitterfeld Railway. Werner Usbeck. Describes the overhead catenary system used on a portion of the Prussian State Rys. Ills. 1500 w. Elect'n, Lond—Dec. 29, 1911. No. 29609 A.

Monophase Electric Traction on the Dessau-Bitterfeld Line (La Trazione elettrica monofase sulla linea Dessau-Bitterfeld). Details of overhead construction, generating stations, locomotives, etc., on this German road. Ills. 3600 w. Ing Ferro—Dec. 16, 1911. No. 29816 D.

Electric Traction on the Dessau-Bitterfeld Railway. Mr. Heyden. Detailed description. 6000 w. Bul Int Ry Cong—Oct., 1912. No. 36819 G.

Electrification

The Future of Railway Electrification. Philip Dawson. Abstract of paper read before the Roy. Auto. Club. Considers the adoption in America on main lines and the progress in Europe. 4000 w. Engr, Lond—Dec. 15, 1911. No. 29194 A.

Steam Railroad Electrification. Explains the operating and economical advantages of the electric locomotive. Ills. 1800 w. Ry & Loc Engng—Oct., 1912. No. 36444 C.

Aspects of Steam Railway Electrification. C. L. de Muralt. Reviews what has been accomplished in trunk line electrification, and the future outlook. The advantage of electric locomotives in ability to haul heavy trains over grades at same speed as on a level. 2000 w. Ry Age Gaz—Oct. 4, 1912. No. 36511.

The Electrification of Railways (L'Électrification des Chemins de Fer). J. Monchamps. Description of monophase and triphase currents, and electric installations. 5000 w. Alliance Industrielle—Nov., 1911. No. 28855 N.

The Electrification of the Railways. Mr. Biedermann. A critical review of a memoir by Oskar Kresse, setting forth the disadvantages of the electrification of the German State railways. 3400 w. Bul. Int Ry Cong—Sept., 1912. No. 36276 G.

The Electrification of Main Line Railroads. William J. Clark. A general statement of the things electric traction has accomplished, and their bearing upon the electrification of main lines. Discussion. 9000 w. Jour Fr Inst—June, 1912. No. 34026 D.

Electrification. Discussion on this subject as applied to railroads. Ills. 7000 w. Pro N Y R R Club—March 15, 1912. No. 32150.

Reviews on the Electrification of Main Lines (Rundschau über die Elektrifizierung von Vollbahnen). W. Reichel. Discusses the electrification of some of the German railways. Ills & Maps. Serial. 1st part. 2800 w. Elek Kraft u Bahnen—Jan. 14, 1912. No. 30582 D.

Electrification of Railways. E. O'Brien. Read before the Manchester Assn. of Engrs. Discusses conditions required for successful operation, advantages of electric over steam traction, operation, etc. 2500 w. Mech Engr—Dec. 29, 1912. Serial. 1st part. No. 29615 A.

Discussion on "Induction Machines for Heavy Single-Phase Motor Service," "Electrical Operation of the West Jersey Seashore Railroad," "Analysis of Electrification." Chicago, Ill., June 28, 1911. Papers by E. F. W. Alexanderson, by B. F. Wood, and by W. S. Murray. Ills. 32000 w. Pro Am Inst of Elec Engrs—Jan., 1912. No. 29945 F.

The Influence of an Electric Railway in the Development of Large Cities and Their Social Aspects. M. L. Dousset. Abstract of paper before the Int. St. & Interurban Ry. Assn. at Christiania, Norway. 1500 w. Elec Ry Jour—Aug. 3, 1912. No. 35015.

Different Types of Railroad Electrification. Charles F. Clise. Brief descriptions of the direct current, three-phase, and single-phase systems. 1800 w. Yale Sci M —Nov., 1911. No. 28237 C.

The Relation of Central Station Generation to Railway Electrification. Samuel Insull. Diagrams, discussion and results, comparing unified power supply with the group system for railway purposes. 10000 w. Pro Am Inst of Elec Engrs—July, 1912. No. 34864 F.

The Northwest Power Station Railway of the Commonwealth Edison Company. Illustrated description of a novel electric railway for transporting coal, supplies, and machinery for a Chicago power station. 1200 w. Elec Ry Jour—Nov. 2, 1912. No. 37262.

Central Station Electric Power for Railroad Operation. Frederic Darlington. Explains the important advantages from centralization of power. 3500 w. Pro Am Inst of Elec Engrs—Aug., 1912. No. 35375 F.

The Electrification of the Budapest Local Roads (Die Elektrifizierung der Linien der Budapester Lokalbahnen). J. F. von Tóváros. Reviews the work of electrification of this street system. Ills. & maps. Serial. 1st part. 5500 w. Elek Kraft u Bahnen—June 24, 1912. No. 34522 D.

The 1,000-Volt D. C. Electrification of the Budapest Local Railways, Hungary. Julius de Fischer. Illustrated description of this extensive high-tension direct-current electrification which shows many novelties. 6000 w. Elec Ry Jour—June 1, 1912. No. 33392.

Electrical Equipment of the Austrian State Railways. Illustrates and describes the generating, distribution, and rolling stock equipment for single-phase operation at 25 cycles. 3500 w. Elec Wld—June 8. 1912. No. 33610.

The Power Requirements of the Gotthard Railway in View of a New Plant for its Electrification (Der Kraftbedarf der Gotthardbahn mit Rücksicht auf die Neuanlagen für deren elektrischen Betrieb). W. Kummer. Studies on the determination of such power requirements. Diagrams. Serial. 1st part. 5000 w. Schweiz Bau—Mar. 9, 1912. No. 32051 B.

The Gotthard Railway and Giovi System (Gotthardbahn und Giovi-Linie). K. von Kands. Reviews calculations and measurements for the electrification of the road. Ills. Serial. 1st part. 3300 w. Schweiz Bau—Aug. 17, 1912. No. 36171 D.

The Gotthard Railway and Giovi System (Gotthardbahn und Giovi-Linie). Dr. W. Kummer. Calculations on the power requirements in the electrification of the Giovi branch. 3200 w. Schweiz Bau—Aug. 31, 1912. No. 36172 D.

Electrification of the Lauban-Königszelt Line. Particulars concerning the projected electrification of this line and its branches in the mountainous districts of Prussia. Ills. 1800 w. Ry Gaz, Lond—Feb. 9, 1912. No. 30662 A.

The Electrification of the Dessau-Bitterfeld Line (L'Elettrificazione della linea

Dessau-Bitterfeld.) Civalleri. Describes the route traversed and equipment of the line. Ills. and Map. Serial. 1st part. 2100 w. Industria—Jan. 28, 1912. No. 30638 D.

Memorandum Concerning the Electrification of the Berlin Metropolitan, Circle and Suburban Railways. Drawn up by the Ministry of Public Works of Prussia. 6700 w. Bul Int Ry Cong—Oct., 1912. No. 36818 G.

Recent American A. C. Main Lines (Neuere amerikanische Wechselstrom-Vollbahnen). H. Nordmann. The first number discusses the introduction of electric drive on the Boston and Maine Ry. through the Hoosac Tunnel. Ills. Serial. 1st part. 6500 w. Elek Kraft u Bahnen —Mar. 24, 1912. No. 32066 D.

Electrification of Oakland Suburban Lines. R. T. Guppy. Illustrated account of the development of So. Pacific passenger lines on the east shore of San Francisco Bay. 2500 w. Ry Age Gaz—Sept. 13, 1912. No. 35946.

Electrification of the Butte, Anaconda & Pacific Ry., 2400 Volts Direct Current. Describes work in progress in Montana, and the system and equipment. 1000 w. Ry & Engng Rev—July 6, 1912. No. 34302.

Study of Electrification of Railway Terminals in Chicago. Information concerning investigations now under way. Elec Ry Jour—Oct. 5, 1912. (Special.) No. 36540 N.

The London, Brighton, and South Coast Railway Electrification. Introductory to a series of articles describing in detail this single-phase system. Ills. 2000 w. Engng—Jan. 26, 1912. Serial. 1st part. No. 30316 A.

The Electrification of a Portion of the Suburban System of the London, Brighton, and South Coast Railway. Philip Dawson. With an abstract of the discussion. Illustrated description of the work and statement of results. Plates. 174 pages. Inst of Civ Engrs—March 14, 1911. No. 3929. No. 30489 N.

Fuel Economy

Locomotive Fuel Consumption. A. K. Shurtleff. Discusses the effect of gradient, alignment, operating and other conditions on locomotive fuel consumption. 5500 w. Ry Mas Mech—Oct., 1912. No. 36877 C.

Locomotive Fuel Economy. Ernest Cordeal. Considers points where considerable savings have been effected. 3000 w. Ry Mas Mech—June, 1912. No. 33746 C.

Fuel Economy on the Lackawanna. M. C. M. Hatch. Explains the fuel service system inaugurated on this road. Ills. 1100 w. Ry Age Gaz—Sept. 20, 1912. No. 36070.

Fuel Economy on the Buffalo, Rochester & Pittsburgh. Information from a recently issued bulletin, giving directions to engineers, firemen, and all concerned in the movement and care of locomotives. 2000 w. Ry Age Gaz—Oct. 11, 1912. No. 36769.

Fuel Purchasing

Purchasing Locomotive Fuel. R. D. Quinckel. Abstract of a paper read before the Min. Inst. of Ky. Considers the qualities necessary for a good locomotive coal and other conditions determining values. 2500 w. Mines & Min—Feb., 1912. No. 30220 C.

Funiculars

See Cable Railways, under STREET AND ELECTRIC RAILWAYS.

Inspection Cars

Vehicles for Permanent Way Inspection. Dr. H. Saller. Illustrates and describes vehicles used in Sweden, and discusses the qualities required, and the need of this assistance for watchman. 2000 w. Bul Int Ry Cong—April, 1912. No. 32358 G.

The Erie Track Inspection Car. E. G. Chenoweth. Illustrated description of the car and its equipment. 1500 w. Ry Age Gaz—June 21, 1912. No. 33875.

See also Motor Cars, under *Motive Power and Equipment.*

Locomotives

The Economical Limitations to the Size of Locomotives and Weight of Trains. Editorial discussion of the advantages and disadvantages of large locomotives and heavy trains. 2500 w. Eng News—July 18, 1912. No. 34651.

A Review of Locomotive Practice of To-day. Editorial aiming to show the lines of recent development, and some of the conditions influencing the development. 4000 w. Eng News—July 11, 1912. No. 34407.

Locomotive Developments of 1911. Reviews important features of development followed by leading railways of the United States. 3500 w. Eng News—July 11, 1912. No. 34401.

Recent Development of the Locomotive. George R. Henderson. Notes causes that have led to the production of more powerful locomotives, and illustrates and describes recent types and adjuncts and details. 14500 w. Jour Fr Inst—July, 1912. No. 34627 D.

Steam Locomotives for High Speed Passenger Service. E. C. Schmidt and F. W. Marquis. A summary of the characteristics of engines for this service as used in the United States. 2500 w. Ry Age Gaz —Aug. 9, 1912. No. 35102.

Locomotives—Steam versus Electric. R. V. Macauley. Discusses the economic aspect of electrification of trunk lines, and the more important advantages claimed. 4500 w. Ap Sci—Aug., 1912. No. 36042 C.

Siemens-Schukert A. C. Locomotives for Trunk Lines (Wechselstromlokomotiven der Siemens-Schuckertwerke für Vollbahnen). W. Kleinow. Describes recent types of electric locomotives and their successful application. Ills. Serial. 1st part. 5000 w. Elek Kraft u Bahnen—Aug. 4, 1912. No. 36151 D.

The Future of Locomotive Construction. Leopold Kliment. Shows that the steam locomotive has not reached the limit of its development and that it will not be supplanted by the electric locomotive. 8000 w. Bul Int Ry Cong—Oct., 1912. No. 36820 G.

Types of American Locomotives Popular in the Far East. Illustrations and brief descriptions. 1200 w. Far East Rev—Nov., 1911. No. 29599 N.

Locomotive Types at the International Industrial Exposition, Turin, 1911 (Der Lokomotivbau auf der internationalen Industrie- und Gewerbeaustellung in Turin 1911). Herr Hammer. Describes some of the continental types represented. Ills. 5000 w. Glasers Ann—Sept. 1, 1912. No. 36145 D.

The Latest Types of Locomotives at the Turin Exposition, 1911 (Les derniers types de locomotives a l'exposition de Turin 1911). Description of the Pacific, 4-cylinder, direct-admission type, and the Stumpf uni-direction type. Ills. 5400 w. Tech Mod—Dec., 1911. No. 29780 D.

Recent Types of Steam and Electric Locomotives (Quelques récentes locomotives a vapeur et électriques). M. de Valbreuze. Modern European and American types presented. Ills. 6000 w. Bull Soc Int d' Électriciéns — March, 1912. No. 32084 F.

British Locomotives in 1911. Thomas Reece. Illustrates and describes four typical locomotives. 2500 w. Ry Mas Mech—April, 1912. No. 32110.

British Locomotives in 1911. J. F. Gairns. Review of new designs and work. Ills. 7000 w. Bul Int Ry Cong—April, 1912. No. 32355 G.

The Progress of Italian Railways. Illustrated review of the improvements effected in the locomotives. 4000 w. Engr, Lond—Sept. 6, 1912. No. 36002 A.

British Built Locomotives for the Entre Rios Railways. Illustrated description of engines for this Argentine line. Plate. 800 w. Ry Gaz, Lond—Jan. 5, 1912. No. 29666 A.

The 50,000th Locomotive of the American Locomotive Co. Illustrated detailed description of this experimental passenger locomotive and the results obtained. 2500 w. Ry & Engng Rev—Jan. 6, 1912. No. 29499.

The 50,000th Locomotive of the American Locomotive Co. Illustrated detailed description of an experimental Pacific type designed to provide the maximum power per pound of weight. 2500 w. Mach (Ry Ed)—Feb., 1912. No. 30313 C.

Locomotive Number Fifty Thousand. Illustrated detailed description of an experimental Pacific type designed with all modern improvements to provide the maximum power per pound of weight. 2500 w. Sci Am Sup—April 6, 1912. No. 31770.

Santa Fe Type Locomotive for the Chicago, Burlington & Quincy R. R. Illustrated detailed description of engines of the 2-10-2 type for freight service. 2000 w. Ry & Engng Rev — April 13, 1912. No. 31981.

Recent Santa Fe Locomotives. Information concerning 70 new locomotives embracing 6 types. Ills. 2500 w. Ry Mas Mech—Oct., 1912. No. 36878 C.

New Motive Power on the Santa Fe. Illustrates and describes four types recently put in service. 1800 w. Am Engr —Oct., 1912. No. 36517 C.

Atlantic Type Express Locomotive for the Chinese Government Railways. Illustrations and particulars of an engine recently built for the Tao-Ching Ry. Plate. 500 w. Engr, Lond—Aug. 30, 1912. No. 35897 A.

New Atlantic-Type Locomotives for the Anglo-Scottish Expresses. Frederick C. Coleman. Brief illustrated description. 500 w. Sci Am—Nov. 11, 1911. No. 27789.

Pacific Type Locomotives for the Chicago & Eastern Illinois R. R. Illustrated description. 800 w. Ry & Engng Rev—May 4, 1912. No. 32604.

4-6-2 Type of Locomotive, for the Central of Georgia Railway. Illustrated description of a Pacific type of locomotive. 900 w. Ry & Loc Engng—June, 1912. No. 33399 C.

Anthracite Burning Pacific Type Locomotives. Illustrated detailed description of engines introduced by the Lackawanna to haul 460-ton trains at speeds of 30 miles an hour on 1.6 per cent grades. 1700 w. Ry Age Gaz—July 19, 1912. No. 34664.

Pacific Type Locomotives for the Delaware, Lackawanna & Western R. R. Illustrated detailed description of these new engines, calling attention to special features. 2000 w. Ry & Engng Rev—July 27, 1912. No. 34879.

Pacific Type Locomotive for the St. Louis & San Francisco R. R. Elevation, cross sections and description. 600 w. Ry & Engng Rev—July 6, 1912. No. 34301.

Heavy Hard Coal Burning Pacifics. Illustrated description of new engines for the D., L., & W. R. R. 1500 w. Am Engr—Aug., 1912. No. 34932 C.

Powerful Pacific Type Locomotives, Frisco Lines. Illustrations. dimensions and information. 1000 w. Ry Mas Mech —Oct., 1912. No. 36880 C.

Pacific Type of Locomotive for the Atlantic Coast Line. Brief illustrated description of heavy engines. 700 w. Ry & Loc Engng—Nov., 1911. No. 27637 C.

Pacific Type Express Locomotives for the Italian State Railways. Charles R. King. Illustrated detailed description. 3000 w. Mach (Ry Ed)—Dec., 1911. No. 28695 C.

Experimental Pacific Type Locomotive. Illustrated description of a locomotive built to secure information as to the maximum possibilities in economy and capacity per unit of weight. 2500 w. Ry Age Gaz —Dec. 29, 1911. No. 29268.

Pacific Type of Locomotive for the Chicago and Eastern Illinois. Illustration and description of engines using superheated steam. 1200 w. Ry & Loc Engng —April, 1912. No. 31746 C.

Pacific Type Locomotives. Illustrated description of locomotives of the 4-6-2 type for the N. C. & St. L. Ry. 700 w. Am Engr—March, 1912. No. 31062 C.

Pacific Type of Locomotive for the A., T. & S. F. Railway. Illustrations, with description of details. 800 w. Ry & Loc Engng—March 1912. No. 30948 C.

Mikado and Pacific Type Locomotives for the Buffalo, Rochester & Pittsburg Ry. Illustrated comparison of new locomotives with those they have replaced. 1000 w. Ry & Engng Rev—June 1, 1912. No. 33389.

Performance of Mikado Type Locomotive, Chesapeake & Ohio Ry. Illustrated description with report of tests. 1200 w. Ry & Engng Rev—June 22, 1912. No. 33903.

Powerful Mikados for the Lackawanna. Illustrated description of engines designed to handle heavy freight trains. 800 w. Ry Age Gaz—Aug. 30, 1912. No. 35638.

Powerful Mikado Locomotives. Illustration and description of engines for the Chicago, Rock Island & Pacific. 500 w. Ry Age Gaz—Aug. 23, 1912. No. 35408.

Mikados for the Lackawanna. Illustrated description of engines for freight service, designed to haul heavy trains. 700 w. Am Engr—Sept., 1912. No. 35853 C.

Comparative Tests of Freight Locomotives. Gives results of comparative tests between new Mikados and consolidation locomotives previously used in the same service on the D., L. & W. R. R. 1000 w. Ry Age Gaz—Oct. 4, 1912. No. 36515.

New Mikado Type Locomotives. Describes a Mikado type with superheater, for the Southern Ry. Co. Ills. 1000 w. Am Eng & R R Jour—Dec., 1911. No. 28720 C.

Mikado Locomotives for the Great Northern. Illustrated detailed description. 1200 w. Ry Age Gaz—Dec. 15, 1911. No. 29009.

Consolidation Locomotive on the Lehigh and New England R. R. Illustration, with description. 800 w. Ry & Loc Engng—Jan., 1912. No. 29341 C.

Mikado Superheater Locomotives for the Missouri Pacific. Illustrated detailed description. 1000 w. Ry Age Gaz—Jan. 12, 1912. No. 29554.

Mikado Locomotives for Heavy Freight Service. Illustrates and describes the heaviest Mikado yet built, to be placed in service of the C. & O. Ry. 1200 w. Ry Age Gaz—Feb. 2, 1912. No. 30201.

Mikado Type Locomotive for the Chesapeake & Ohio Ry. Illustrated description of an engine designed to haul 4,000 tons on a 0.3 per cent grade at a speed of 15 miles per hour. 2000 w. Ry & Engng Rev—Feb. 10, 1912. No. 30380.

Mikado Locomotives for the Erie. Illustrated detailed description of new engines and the service they were designed to meet. 1000 w. Ry Age Gaz—Feb. 9, 1912. No. 30362.

Mikado Type Locomotives for the Erie Railroad. Illustrated detailed description of recently completed engines. 800 w. Ry & Engng Rev—Feb. 3, 1912. No. 30260.

Mikado Type of Locomotive for the Chesapeake and Ohio. Illustrated description of a 2-8-2 type. 1000 w. Ry & Loc Engng—March, 1912. No. 30952 C.

Mikado Locomotives of Great Power. Illustrated detailed description of 2-8-0 type ordered by the C. & O. Ry. 1000 w. Am Engr—March, 1912. No. 31060 C.

Mallet Locomotives in Road Service on the Chesapeak & Ohio Ry. Illustrations of the Mallet compound and the consolidation formerly in service, with description and report of savings claimed by the change. 2000 w. Ry & Engng Rev—April 27, 1912. No. 32450.

Maintaining Mallet Locomotives. A report of New York Central & Hudson River practice. 2000 w. Am Engr—July, 1912. No. 34261 C.

Simple Mallet for High Speed. G. I. Evans. Illustrates and describes an articulated locomotive with four equal size cylinders grouped at the center of the wheel base and designed for speeds up to 50 miles per hour. 2500 w. Am Engr—July, 1912. No. 34262 C.

Type of Mallet Articulated for the Lake Terminal Railroad. Illustrated description of an engine designed to push trains of loaded cars from the docks at Lorain, Ohio. 800 w. Ry & Loc Engng—July, 1912. No. 34194 C.

Mallet Articulated Locomotive for St. Louis, Iron Mountain & Southern Ry. Illustrated detailed description. 1000 w. Ry & Engng Rev—June 15, 1912. No. 33755.

Powerful Mallet Compound Locomotive for the Virginian Ry. Drawings and description. 1000 w. Ry & Engng Rev—June 22, 1912. No. 33902.

The Most Powerful Locomotive. Illustrates and describes the Mallets of the Virginian Ry. 800 w. Am Engr—June, 1912. No. 33606 C.

Mallet for Yard Service. Illustrated description of a locomotive for hump yard service. 1200 w. Am Engr—Aug., 1912. No. 34935 C.

Mallet Locomotive for the Virginian Railway. Plate, illustrations, and description of one of four large locomotives recently built, explaining the conditions they are required to meet. 1000 w. Engr, Lond—Sept. 13, 1912. No. 36272 A.

Simple Mallet Locomotives, on the Canadian Pacific and Pennsylvania Roads. Drawings and descriptions of the two types. Ills. 2000 w. Ry & Engng Rev—Sept. 14, 1912. No. 35971.

Mallet Locomotives for the Great Northern. Illustrated description of one of the twenty-five engines recently built, which develop a tractive effort of 100,000 pounds working compound. 2000 w. Ry Age Gaz—Sept. 27, 1912. No. 36388.

Mallet Locomotives for the Southern Pacific. Illustrated description of engines to be used in passenger service on the Sacramento division. 1000 w. Ry Age Gaz—Nov. 10, 1911. No. 27780.

The Mallet Locomotive on American Railways. Illustrated descriptive review of types in service on various American railways and their performance. 2500 w. Engr, Lond—Dec. 8, 1911. Serial. 1st part. No. 29059 A.

Experimental Mallet Locomotive for the Pennsylvania. Illustration with brief description. 300 w. Ry Age Gaz—March 1, 1912. No. 30959.

Mallet Locomotives for the Canadian Pacific Railway. Frederick H. Moody. Explains what the Mallet compound is, where it originated, the conditions in the United States and Canada that it is expected to meet, and describes the new Mallets for the C. P. Ry. Ills. 6000 w. Ap Sci—March, 1912. No. 31781 C.

Largest Non-Articulated Locomotive. Illustrated detailed description of a new C. B. & Q engine having a tractive effort of 71,500 lbs., obtained with one group of drives and two simple cylinders. 2000 w. Ry Age Gaz—May 3, 1912. No. 32575.

4-Ft. 8-In. Eight-Coupled Side Track Shunting Engine, L. & N. W. R. Illustrations with brief note. 100 w. Ry Gaz, Lond—May 3, 1912. No. 32877 A.

Simple High Speed Articulated Locomotive. Drawings and description of an engine for the Canadian Pacific, intended for operating up to 50 miles an hour. 1500 w. Ry Age Gaz—July 12, 1912. No. 34423.

The Garratt Locomotive. Illustrated description of a recent type of articulated locomotive for the Tasmanian Rys. 1200 w. Ry & Engng Rev—Jan. 6, 1912. No. 29498.

Garratt Locomotives for the Tasmanian Government Railways. Illustrated description of two engines recently built, one for passenger, the other for goods service. 1200 w. Engng—Sept. 13, 1912. No. 36265 A.

Balanced-Compound Locomotives. Illustrated description and discussion of features of a new engine designed for heavy grades on the A., T. & S. F. Ry. 3000 w. Eng News—March 28, 1912. No. 31632.

The Great Western Locomotive "Great Bear." Detailed drawings and description of six-coupled express engine. 5000 w. Engr, Lond—May 3, 1912. No. 32889 A.

Balanced Compound Express Locomotive, Swiss Federal Railways. Drawing and description of Class 600, with superheater boiler, specially noteworthy by reason of the remarkably heavy express trains hauled by such small machines. 800 w. Engr, Lond—Aug. 30, 1912. No. 35900 A.

Compound Goods Locomotive for the Italian State Railways. Illustrated detailed description of a 4-cylinder compound locomotive exhibited at Turin. Plate. 1500 w. Engng—Jan. 12, 1912. No. 29907 A.

Consolidation Locomotive, Leopoldina Railway. Illustrated description of a powerful 2-8-0 locomotive for Brazil. 500 w. Ry Gaz, Lond—April 12, 1912. No. 32257 A.

Tank Locomotive for the County Donegal Railways Joint Committee. Illustrations and particulars. 300 w. Ry Gaz, Lond—April 26, 1912. No. 32835 A.

Four-Coupled (4-4-2 Type) Tank Locomotive, North British Railway. Plate illustrations and note of one of thirty passenger engines for service on short distance express trains to the Coast and elsewhere. 150 w. Engng—May 3, 1912. No. 32884 A.

Locomotives with Five and Six Coupled Axles. Illustrated description of 2-10-2 locomotives for the C., B. & Q. R. R., and 2-12-2 tank locomotives for Java. 700 w. Eng News—Sept. 19, 1912. No. 36092.

New Superheater Tank Engines, North Staffordshire Railway. Illustrations, with brief description. 300 w. Engr, Lond—March 22, 1912. No. 31734 A.

New Four-Cylinder Express Locomotives, with Simple Expansion and Superheaters, on the French State Railways (Nouvelles Locomotives a grande vitesse à quatre cylindres, á simple expansion et surchauffe, des Chemins de fer de l'État français). L. Pierre-Guédon. Detailed description and operation. Ills. and plate. 3000 w. Génie Civil—Aug. 24, 1912. No. 36197 D.

New Locomotives for the Great Central Railway. Illustrates and describes 2-8-0 superheated grade locomotives. Plate. 500 w. Ry Gaz, Lond—Oct. 11, 1912. No. 36919 A.

Superheater Engines for the Indian State Railways. Illustrates five different types of locomotives recently built for this service. 500 w. Engr, Lond—Oct. 11, 1912. No. 36941 A.

Superheater Locomotives 2—8—2 Type. Illustrates and describes powerful simple locomotives for the Great Northern Ry. 1200 w. Am Engr & R R Jour—Nov., 1911. No. 27765 C.

Powerful Freight Locomotive with Superheater. Illustrated description of engines for the Missouri Pacific Ry. 600 w. Am Engr & R R Jour—Nov., 1911. No. 27768 C.

Type of Locomotive for the Duluth, Winnipeg and Pacific Ry. Illustrated description of 10-wheel engines equipped with fire-tube superheaters. 800 w. Ry & Loc Engng—Dec., 1911. No. 28620 C.

Express 4-4-0 Locomotive with Schmidt Superheater and Stumpf Valve Gear. E. Krauss. Illustrated description of the engine and its operation. 2900 w. Bul Int Ry Cong—Nov., 1911. No. 28744 G.

Locomotive Superheaters. L. V. Ludy. Illustrates and describes types successfully used. 3000 w. Wis Engr—Dec., 1911. No. 29071 C.

Superheater Goods Engine, Midland Railway. Illustrated description of a new type of 0-6-0 engine, fitted with Schmidt's superheater. 500 w. Engr, Lond—Dec. 29, 1911. No. 29625 A.

New Superheater Goods Engines, Midland Railway. Illustrates and describes a new type of 6-wheel coupled goods locomotive, with superheater. 500 w. Ry Gaz, Lond—March 8, 1912. No. 31249 A.

1-C-1 Express Locomotives (1-C-1-Schnellzuglokomotive). Herr Michin. Detailed description of Russian passenger express locomotive. Ills. and plate. 3300 w. Zeitschr des Ver deutscher Ing—Mar. 30, 1912. No. 32046 D.

Passenger Locomotive (4—6—2 Type) for the Belgian State Railways. Dimensions and illustrated description. 1800 w. Engng—Nov. 3, 1911. No. 28033 A.

Express Passenger Locomotive for the North-Eastern Railway. Illustrated description of a 3-cylinder express engine recently built. 500 w. Engr, Lond—Nov. 3, 1911. No. 28043 A.

"Baltic" Type Locomotives—Northern Railway of France. Illustration, drawings and description of the largest and most powerful express passenger locomotives in Europe. 1000 w. Ry Gaz, Lond—June 7, 1912. No. 33776 A.

The French "Baltic" Locomotives for the "Novel Express." Charles R. King.

Brief illustrated description of French passenger locomotive for high-speed service. 800 w. Mach (Ry Ed)—Jan., 1912. No. 29485 C.

The Most Powerful European Express Engine. Illustration and brief description of a Baltic type 4-cylinder compound superheater locomotive for the "Nord Express," France. 700 w. Sci Am—Dec. 16, 1911. No. 28977.

Locomotives for the Caledonian Railway Fitted for Burning Oil. J. F. McIntosh. Gives the piping arrangement of a temporary installation employing the Holden liquid-fuel injectors. 200 w. Engng—April 12, 1912. No. 32275 A.

The Canadian Pacific Railway's Oil-Fuel-Burning T.-S.S. "Princess Alice." Illustrated description of this vessel and the oil-burning apparatus which has been recently installed. 1500 w. Engng—Dec. 8, 1911. No. 29053 A.

Oil Burning Locomotives. Illustrates and describes standard practices of the leading roads using fuel oil, giving data and results. 5000 w. Ry Mas Mech—June, 1912. Serial. 1st part. No. 33744 C.

Oil-Burning Locomotives on the Tehuantepec National Railroad, Mexico. R. Godfrey Aston. An account of liquid-fuel burning showing some of its advantages over coal, and giving a general description of facilities for handling and storing, methods of burning, and a few results. Ills. 3500 w. Inst of Mech Engrs—Dec. 15, 1911. No. 29614 N.

The "Closed Circuit" Crude Oil Locomotive. Details of a proposed locomotive of this type, worked out in Glasgow, for tractive purposes on railways. Ills. 1500 w. Engr, Lond—Jan. 12, 1912. No. 29915 A.

1000 B. H. P. Crude Oil Locomotive. Drawings and description of the Dunlop adiabatic closed-circuit air-transmission system. 3500 w. Mech Engr—Jan. 19, 1912. No. 30161 A.

Fireless Locomotive. Illustrated description of a locomotive built for the National Cash Register Co. on the steam storage principle, explaining its advantages. 500 w. Ry Age Gaz—Nov. 17, 1911. No. 28076.

Fireless Locomotives. Illustrates and describes locomotives using superheated water in place of a coal fire. 2000 w. Sci Am Sup—Dec. 16, 1911. No. 28987.

Some Recent French Locomotives. Illustrates and describes new types. 400 w. Engr, Lond—April 12, 1912. No. 32284 A.

2-10-2 Type of Locomotive for the Chicago, Burlington & Quincy. Illustrated description of the largest engines ever built with all the driving wheels coupled in one group. 2200 w. Ry & Loc Engng—May, 1912. No. 32530 C.

Six-Coupled Express Passenger Engine, Great Eastern Railway. Plate, illustrations, and dimensions. 300 w. Engr, Lond—June 14, 1912. No. 33945 A.

Simple Freight Locomotives for the Virginian. Illustrated description. 600 w. Ry Age Gaz—July 5, 1912. No. 34258.

A High-Power Passenger Locomotive. Illustrates and describes the special features of an experimental passenger locomotive of high power and relatively light weight, designed by the American Locomotive Co. 4000 w. Eng News—July 18, 1912. No. 34643.

Goods Engine for the East Indian Railways. Illustrations with brief description. 300 w. Engr, Lond—July 19, 1912. No. 34904 A.

Six Coupled Express Passenger Locomotive, Great Eastern Railway. Illustration of new 4—6—0 engine, with brief description. 300 w. Ry Gaz, Lond—Feb. 9, 1912. No. 30660 A.

Maximum Interchangeability Designs of the Baldwin Locomotive Works. Illustrates and describes interesting designs worked out with careful attention to detailed interchangeability. 700 w. Ry & Engng Rev—March 2, 1912. No. 31007.

Remarkable Locomotives of 1911. J. F. Gairns. Illustrates notable designs. 4000 w. Cassier's Mag—May, 1912. No. 33026 B.

Narrow-gage Locomotives (Lokomotiven der Schmalspurbahnen). E. A. von Ziffer. A study and description of this type. 4000 w. Mitt d ver f d Förd d Lokal u Strassenbahnwesens—Oct., 1911. No. 28504 F.

Some Locomotive Curiosities. Herbert T. Walker. Illustrated account of how present practice was reached. 2000 w. Sci Am—Dec. 16, 1911. No. 28978.

Standard (4-4-0 Type) Locomotive; Eastern Bengal State Railway. Illustrated description. Plate. 700 w. Engng—April 5, 1912. No. 31996 A.

See also Oil-Burning Locomotives, under *Motive Power and Equipment;* Stresses, under CIVIL ENGINEERING, *Bridges;* Mine Locomotives, under MINING AND METALLURGY, *Mining,* and Locomotives, under STREET AND ELECTRIC RAILWAYS.

Locomotive Balancing

The Balancing of Locomotives. Jas. Dunlop. States the problem to be solved and then considers various types of construction and how the weights should and should not be dealt with. Ills. 3500 w. Mech Engr—Feb. 23, 1912. Serial. 1st part. No. 31026 A.

A Contribution to the Theory of the Balance Weights of Locomotives. J. Jahn. A discussion of the problem of balancing and its solution. 6600 w. Bul Int Ry Cong—Feb., 1912. (Part 2.) No. 30895 G.

Locomotive Boilers

The Relation of Locomotive Boiler Design to Efficiency, Maintenance and Safety. A. W. Whiteford. Illustrated description of the sectional boilers, explaining the advantages claimed, and reporting tests. General discussion. 17500 w. Pro N Y R R Club—Sept. 20, 1912. No. 36967.

Maintenance of Locomotive Boilers. Walter R. Hedeman. Rules and instructions for washing out, inspecting and testing of the boiler and its appurtenances. 2200 w. Am Engr—Oct., 1912. No. 36518 C.

Locomotive Boiler Troubles. J. W. Harkom. Read before the Can. Ry. Club. Discusses staybolt failures, firebox crown sheets, leaky tubes, latest types of boilers, etc. 2500 w. Boiler Maker—Oct. 1912. No. 36597.

Assembling a Locomotive Boiler. Ralph E. Flanders. Illustrated description of practice at the shops in Altoona, Pa. 3000 w. Mach (Ry Ed)—Aug., 1912. No. 34937 C.

Note on Water-Tube Boilers of the Torpedo-Boat Type and Their Application to Locomotives. J. Robert. Compares smoke-tube and water-tube boilers, and explains the working. Ills. 4600 w. Bul Int Ry Cong—July, 1912. No. 34733 G.

Butt-Riveted Joints in Locomotive Boilers (Lokomotivkessel-Laschennietungen). J. Kempf. Treats of the mathematics of stress determination in rivets in three modes of joints. Ills. 3000 w. Glaser's Annalen—Jan. 15, 1912. No. 30547 D.

The Laws of Evaporation and Heat Transmission in Locomotive Boilers (Ueber das Verdampfungsgesetz und das Gesetz der Wärmeübertragung des Lokomotivkessels). O. Köchy. Mathematical review of various determinations of these laws. Diagrams. 5500 w. Zeitschr des Ver deutscher Ing—March 30, 1912. No. 32049 D.

The Damage to Tubular Plates in Locomotive Boilers (Les Avaries des Plaques Tubulaires dans les Chaudières de Locomotives). H. Lavialle d'Anglards. Notes on the repair of tubular boiler plates and methods of repair. Ills. Serial. 1st part. 2400 w. Génie Civil—March 9, 1912. No. 32096 D.

Locomotive Cabs

Cab Details of 4—6—2 Locomotive. Illustration of a locomotive cab on the Paris, Lyons & Mediterranean Ry. showing the great complication. 700 w. Am Engr & R R Jour—Nov., 1911. No. 27769 C.

Locomotive Design

The Design of Express Locomotives. E. Cecil Poultney. Abstract of paper read before the Birmingham Assn. of Mech. Engrs. Discusses some of the principles involved in engines for heavy passenger trains at high speed. 3500 w. Mech Engr—Dec. 8, 1911. No. 29046 A.

The Calculations for Locomotive Connecting-Rods (Die Berechnung der Kurbelstangen bei Lokomotiven). J. Kempf. Tables, formulae and diagrams. 1500 w. Glasers Ann—Sept. 15, 1912. No. 36681 D.

Locomotive Explosions

Locomotive Explosion at San Antonio, Texas. Illustrations and report of a disaster caused by the explosion of a So. Pacific locomotive. 800 w. Ry Age Gaz—April 5, 1912. No. 31806.

San Antonio Locomotive Explosion. Abstract of a report by John F. Ensign to the Interstate Commerce Commission. An interesting report, fixing the blame. Also editorial note. 2500 w. Power—June 4, 1912. No. 33421.

Statement of Mr. Fay on San Antonio Boiler Explosion. Analysis of the evidence brought out by the Railway Company's inquiry. 3500 w. Ry Age Gaz—June 21, 1912. No. 33873.

Locomotive Fireboxes

The Relation of the Brick Arch to Locomotive Operation. John P. Neff. Explains the theory of the arch and what takes place in the locomotive firebox with and without the arch. Also discussion. 7500 w. Pro Ry Club of Pittsburgh—May 24, 1912. No. 34782 C.

Advantages and Disadvantages of the Use of Arches and Arch Pipes in Locomotive Fire-Boxes. From a committee report before the Master Boiler Makers' Assn., May. 1912. 2500 w. Boiler Maker—July, 1912. No. 34398.

Marshall's Fire-Box With Stayless Roof. Illustrated description with Prof. R. Baumann's calculations with regard to the strengthening effect of the cross-shaped corrugations. 2000 w. Engng—Aug. 30, 1912. No. 35892 A.

The Staying of Fire-Boxes. Robert Weatherburn. Discusses the mechanical applications to staying, and the causes, actions and results which are termed wear and tear. 2200 w. Engr, Lond—May 17, 1912. Serial. 1st part. No. 33274 A.

Locomotive Flue Gas

The Utility of Flue Gas Analyses in Locomotive Testing. Sanford H. Fry. An examination of tests made by Dr. W. F. M. Goss, showing the value of flue gas analyses by application to these tests. 2000 w. Ry Age Gaz—June 21, 1912. No. 33870.

Locomotive Boiler Flue Gas Analysis. Sanford H. Fry. Gives a simple method of finding the weight of the gases and of dividing the boiler efficiency into its component parts. 3000 w. Ry Age Gaz—July 5, 1912. No. 34256.

Locomotive Fuels

Locomotive Fuel. A chapter from a forthcoming book. Deals with the subject of compound and single expansion engines from the basis of economic results. 1500 w. Ry & Engng Rev—May 18, 1912. Serial. 1st part. No. 32958.

Fuel as a Factor in Locomotive Capacity. W. F. M. Goss. Read before the Int. Ry. Fuel Assn. On the importance of larger grate areas in locomotive practice. 2500 w. Ry & Engng Rev—June 1, 1912. No. 33390.

International Railway Fuel Association. Gives abstracts of papers presented at the recent convention in Chicago. 13500 w. Ry Age Gaz—May 31, 1912. No. 33338.

International Railway Fuel Association. Report of the Chicago meeting, with abstracts of papers and discussions. 21000 w. Am Engr—June, 1912. No. 33607 C.

Locomotive Drafting and Its Relation to Fuel Consumption. H. B. MacFarland. Extracts from a paper read before the Int. Ry. Fuel Assn. Gives results of extensive experiments, discusses details, and criticises present practice. Diagrams. 11500 w. Ry & Engng Rev—June 8, 1912. No. 33637.

Investigations into the Application of Petroleum Products for Locomotive Driving (Die Herstellung und Untersuchung der im Eisenbahnbetrieb verwendeten Petroleumprodukte). L. Weinstein. Discussion on the kinds of oil available as fuel for railway work. 3000 w. Glaser's Ann—May 15, 1912. No. 33525 D.

Oil Fuel. J. F. Ryan. Discusses oil storage, action on flues, black smoke, handling atomizers, blowers and dampers and related subjects. General discussion. 7000 w. Pro S & S-W Ry Club—Sept., 1912. No. 36699 C.

Note on the Application of Liquid Fuel to the Engines of the Great Eastern Railway. James Holden. Describes the application of the improved Stewart burner and the satisfactory results. Plate. 2000 w. Inst of Civ Engrs—No. 3937. No. 29967 N.

Use of Denatured Alcohol in Railway Service. Michael Schwarz. Points to be gained by substituting denatured alcohol for other fuels are considered. Discussion. 8500 w. Pro W Ry Club—Nov. 21, 1911. No. 30029 C.

See also Locomotives, under *Motive Power and Equipment*, and Gasoline Motors, under MECHANICAL ENGINEERING, *Combustion Motors.*

Locomotive Headlights

Headlight Tests by the Wisconsin Commission. Report of tests made with the co-operation of the Chicago, Milwaukee & St. Paul and the Chicago & North Western Railroads. 3500 w. Ry Age Gaz—Oct. 18, 1912. No. 36883.

Locomotive Firing

Thick and Thin Firing of Locomotives. Shows the advantages gained by thick firing, obtained by grate shaking. 2000 w. Ry Age Gaz—Dec. 15, 1911. No. 29006.

Locomotive Maintenance

Locomotive Maintenance Costs. Gives a table of expenses of 30 large railways for the maintenance of locomotives during the past four years. Also an article on the "Weight of Equipment as a Factor in the Cost of Transportation." 2500 w. Ry & Engng Rev—April 6, 1912. No. 31851.

Locomotive Oscillation

The Oscillation of Rolling Material on Railways (Les Oscillations du Matériel roulant des Chemins de Fer). A. Stouvenot. Similar views to those expressed by Georges Marié, but illustrating a different method of determining the oscillation in locomotive springs. Ills. Serial. 1st part. 4800 w. Tech Mod—Sept. 15, 1912. No. 36672 D.

Locomotive Parts

Experiments on Fire-Boxes, Tubes, and Stays. Robert Weatherburn. A report of experiments and ordinary conditions of working. Ills. 3300 w. Engr, Lond—Feb. 23, 1912. Serial. 1st part. No. 31045 A.

Locomotive Performance

Locomotive Efficiency. Ernest Cordeal. Describes a system for comparing the performance of locomotives as to service, speed, load, and cost. 5000 w. Ry Mas Mech—March, 1912. No. 31221.

Recent Great Western Express Work. Notes on the work—principally of the "Queen" class—of the heaviest expresses of the Great Western Ry. 2000 w. Engr, Lond—Dec. 29, 1911. No. 29623 A.

Economies Effected by Mallet Locomotives on the New York Central & Hudson River. Report of tests with illustrated description of the engine tested. 2500 w. Ry Age Gaz—Nov. 24, 1911. No. 28266.

Service of Mallet Articulated Locomotives. Detailed report of what locomotives of this type are doing in actual road service, and a study of their money value when compared with the consolidation type. 6500 w. Am Engr & R R Jour—Dec., 1911. No. 28717 C.

Test of a Mallet Locomotive Equipped With Superheater and Brick Arch. Reports most encouraging tests on the Penn. Div. of the N. Y. Cent. & H. R. R. R. Ills. 2200 w. Am Engr & R R Jour—Dec., 1911. No. 28719 C.

Testing a Mallet on the New York Central. Reports an exhaustive test of a Mallet 2-6-6-2 to determine its efficiency. Ills. 1500 w. Ry & Loc Engng—Dec., 1911. No. 28622 C.

Mallet Results in Road Service. Reports 37½ per cent saving effected by the use of high capacity freight locomotives on the C. & O. Ills. 2000 w. Ry Age Gaz—April 5, 1912. No. 31803.

Locomotive Power

The Power Capacity of the Locomotive in Its Dependence on Boiler Size and Speed (Die Leistungsfähigkeit der Lokomotiven in ihrer Abhängikeit von Kesselgrösse und Geschwindigkeit). H. Nordmann. A comparative discussion on the interrelation of power, boilers and speed. 5600 w. Glaser's Ann—Nov. 15, 1911. No. 28838 D.

Locomotive Pressures

Back Pressure in Locomotive Engines. George Hughes. Illustrates and describes devices for reducing back pressure in locomotive engines. 900 w. Engr, Lond—Aug. 9, 1912. No. 35306 A.

Locomotive Repairs

Locomotive Repairs. R. B. Van Wormer. Outlines the method of handling repairs at shop in Waycross, Ga. 1000 w. Ry Age Gaz—Dec. 1, 1911. No. 28571.

A Practical Application of the Routing System to Locomotive Repairs. Henry Gardner. Outlines a system installed by the writer. General discussion. 11500 w. Pro Cent Ry Club—Sept. 12, 1912. No. 36969 C.

Piston, Piston Rod and Crosshead Repairs. Two papers submitted in a competition, describing methods employed in two different shops. Ills. 2500 w. Am Engr—Oct., 1912. No. 36519 C.

See also Welding, under MECHANICAL ENGINEERING, *Machine Works and Foundries*, and Routing Systems, under INDUSTRIAL ECONOMY.

Locomotive Stokers

Street Mechanical Stoker. Illustrated description of the screw conveyer type. 800 w. Ry Age Gaz—Jan. 5, 1912. No. 29406.

Present Status of Mechanical Stokers for Locomotives. A portion of the report of the Committee to the American Ry. Master Mech's Assn. Reviews the stokers in service and describes new stokers under process of development. 3500 w. Eng News—June 27, 1912. No. 34114.

See also Mechanical Stokers, under MECHANICAL ENGINEERING, *Steam Engineering*.

Locomotive Tests

Comparative Service Tests of Locomotives. Report of road trials on the B., R. & P. to determine the efficiency of the automatic stoker, superheater, and brick arch. Ills. 1800 w. Ry Age Gaz—Sept. 13, 1912. No. 35947.

Testing Plant Results and the Locomotive Boiler. Lawford H. Fry. Shows how locomotive testing-plant results have increased our knowledge concerning the processes of combustion and heat transference. 3000 w. Engr, Lond—Aug. 23, 1912. No. 35758 A.

Low Water Locomotive Boiler Tests. An outline of the bursting tests and the results both expected and unexpected. Ills. 2000 w. Ry Age Gaz—June 28, 1912. No. 34123.

Tests on Compound, Superheater, Pacific Locomotives of the Compagnie d'Orléans (Essais des Locomotives Pacific Compound a Surchauffe de la Compagnie d'Orléans). Paul Conté. Gives results of a series of tests, describing locomotives, and giving diagrams and tables. 5000 w. Rev Gen des Chemins de Fer—June, 1912. No. 33597 G.

Tests of Locomotives While Running. Joseph Doyen. Considers the Prussian method and the Belgian method. 3300 w. Bul Int Ry Cong—Oct., 1912. No. 36817 G.

Comparative Service Tests of Locomotives. Report of road trials on the B. R.

& P. to determine the efficiency of the superheater and brick arch. 1200 w. Am Engr—Oct., 1912. No. 36520 C.

Variations in Locomotive Tractive Effort with Speed. A. S. Williamson. Considers methods of estimating the variation and the accuracy of such estimates. 3000 w. Ry Age Gaz—March 22, 1912. No. 31464.

Lubrication

Locomotive Valve and Cylinder Lubrication in Connection with Saturated and Superheated Steam. Dr. P. H. Conradson. The qualities a suitable oil should possess are explained and illustrates and describes apparatus. General discussion. 12500 w. Pro W Ry Club—March 9, 1912. No. 32298 C.

Locomotive Valve and Cylinder Lubrication in Connection with Superheated Steam. P. H. Conradson. On the requirements and the requisite qualities in a valve oil to suit the conditions. Ills. 3500 w. Pro S & S-W Ry Club—Jan, 1912. No. 32458 D.

Forced Feed Lubrication of Driving Boxes. Explains the principle of the force feed lubricator. 2000 w. Ry & Loc Engng—April, 1912. No. 31747 C.

Mail Cars

Proposed Specification for Postal Cars. Gives the proposed specification, submitted for approval. 3000 w. Ry Age Gaz—Nov. 24, 1911. No. 28264.

Tentative Specifications for Steel Postal Cars. Gives proposed specifications for their construction. 3000 w. Ry & Engng Rev—Nov. 25, 1911. No. 28368.

The Proposed Specifications for Steel Postal Cars. Gives the changes made at meeting of the sub-committee and representatives of the railways, Dec. 4, at Washington. 3000 w. Ry & Engng Rev —Dec. 23, 1911. No. 28911.

Proposed Specifications for Postal Cars. Gives specifications submitted to railways. 2500 w. Am Engr & R R Jour—Dec., 1911. No. 28722 C.

Maintenances

Rolling Stock Maintenance at Worcester, Mass. An account of efficient service rendered by comparatively old shops. Ills. 5000 w. Elec Ry Jour—April 6, 1912. No. 31847.

Car and Track Maintenance in Richmond and Norfolk, Va. Reviews the work of the past year. Ills. 3500 w. Elec Ry Jour—April 6, 1912. No. 31846.

Mine Locomotives

Weight and Equipment of Mine Locomotives. Graham Bright. Considers their determination in practice. 4000 w. Elec Jour—Nov., 1911. No. 28319.

Storage Battery Mine Locomotive. H. B. Barnes. Illustrated description of the equipment and operation of an Edison storage-battery locomotive recently installed at the Big Five tunnel, Idaho Springs, Colo. 1500 w. Eng & Min Jour —Dec. 30, 1911. No. 29239.

See also same heading, under MINING AND METALLURGY, *Mining*.

Motor Cars

Heavy Oil Engines Applied to Railway Motor Cars (Nuovo motore ad olio pesante applicato ad una automotrice ferroviaria). E. Mariotti. Detailed description of motors. Ills. 4000 w. Ing Ferro—Dec. 16, 1911. No. 29817 D.

Operation of Motor Cars in Cold Weather. C. G. Mahana. Suggestions and precautions. 1500 w. Ry Age Gaz —March 15, 1912. No. 31214.

Gasolene Motor Car. Illustration and description of a car for the Nevada Copper Belt Ry. 700 w. Ry Age Gaz—Dec. 22, 1911. No. 29161.

A New Gas-Electric Car. Illustrated description of a self-propelled car introduced on the Canadian Northern Ry. 700 w. Can Engr—April 25, 1912. No. 32442.

Petrol-Electric Car for Suburban Traffic, Great Central Railway. Illustrated description of a car recently placed in service in England. 1000 w. Ry Gaz, Lond—April 12, 1912. No. 32258 A.

Motor Railway Inspection Car. Illustrated description of a petrol-motor coach for the North-Eastern Ry. 700 w. Engr, Lond—May 10, 1912. No. 32995 A.

Motor Inspection Car for High Altitudes. Illustrates and describes cars used on the Autofagasta, Chili, and Bolivia Railway. 800 w. Engr, Lond—July 26, 1912. No. 35173 A.

Self-Propelled Cars. W. B. Potter. Discusses the present state of development of such cars, the cost of operation, maintenance, etc. Also general discussion. Ills. 10000 w. Pro N Y R R Club—Jan. 19, 1912. No. 30646.

Benzol-Electric Railway Motor Cars (Benzolelektrische Eisenbahn-Motorwagen). A. Heller. Description of a new type of passenger car on the Prussian Railway, with motor drive; power furnished from a six-cylinder engine. Ills. and plates. 4900 w. Zeitschr des Ver deutscher Ing—April 27, 1912. No. 32724 D.

Petrol Tramway Cars at Morecambe. Illustrates and describes the first application, in England, of the Leyland motors to tramway service. 3000 w. Tram & Ry Wld—Feb. 8, 1912. No. 30726 B.

The Motor Car in Competition With Railways in General, and Especially With Local and Narrow-Gage Roads (Ueber den Automobilismus im Verkehr auf Eisenbahnen im allgemeinen und insbesondere auf Lokalbahnen und Kleinbahnen). E. A. Ziffer. Description and possibilities of electric motor passenger cars in Germany and abroad. Ills. Serial. 1st part. 7200 w. Mitt d Ver f d Ford d Lokal u Strassenbahnwesen—July, 1912. No. 36603 F.

Refrigerator Cars

The New Refrigerator Cars and Their Practical Demonstrations on the Swedish Railway (Der neue Frigatorkühlwagen und sein praktisches Resultat bei den Schwedischen Staats-Bahnen). Discussions at the Vienna Congresses. 8000 w. Kälte-Industrie—Dec., 1911. No. 29724 N.

Refrigerator Cars with the Frigator System of Brine Circulation (Wagons frigorifiques a circulation de saumure systéme Frigator). Ch. Jacquin. Describes this system as used on the Swedish State Railways. Ills. 4000 w. Genie Civil—Aug. 3, 1912. No. 35589 D.

The Moore Refrigerator Car. Illustrated description of a car with overhead ice bunker and with heating system. 1200 w. Ice & Refrig—Sept., 1912. No. 35774 C.

Relief Trains

The Relief Train of the Baden Governmental Railway (Die Hülfszüge der Grossherzoglich Badischen Staatseisenbahn). Courtin. Description of this combined wrecker and hospital train. Ills. and plate. 5000 w. Zeitschr des Ver deutscher Ing—July 6, 1912. No. 34560 D.

Repair Shop Costs

Workshop Costs in the Repair of Locomotives and Cars on American Railways (Werkstattkosten und -hilfskräfte für die Ausbesserung der Lokomotiven und Wagen bei einer amerikanischen Eisenbahnverwaltung). Bruno Schwarze. Discusses American cost account practices on leading roads. Serial. 1st part. 3000 w. Glaser's Annalen—Feb. 1, 1912. No. 30549 D.

Reversing Gear

The Use of the Pneumatic Reversing Gear. Richard Sanderson. Illustrated description of a power reverse gear and its application to locomotives. General discussion. 7000 w. S & S-W Ry Club —May, 1912. No. 34801 C.

Rolling Stock

Standard Materials for Railway Rolling-Stock. Editorial review of reports of the Engineering Standards Committee. 1500 w. Engng—Feb. 9, 1912. No. 30673 A.

Non-Parallel Axle Rolling Stock. Illustrated study of the non-parallel axle trucks of the Metropolitan Ry of Paris. 1800 w. Engr, Lond—April 19, 1912. No. 32466 A.

Rolling Stock Development on the South African Railways. An explanation of the railway development, and the rolling stock development, illustrating and describing the engines used since 1887. 2500 w. Engr, Lond—July 5, 1912. Serial. 1st part. No. 34475 A.

Screw Couplings

The "Tensio" Railway Screw-Coupling. Interesting features of this type are illustrated and described. 800 w. Engng—Oct. 27, 1911. No. 27732 A.

Shop Practice

The Machinery of Railway Motors. C. B. Auel. Illustrates and describes details of the machinery operations. 2000 w. Am Mach—March 7, 1912. Serial. 1st part. No. 31069.

The Electrical Equipment of Railroad Shops. George W. Cravens. Considers the general layout and requirements, illustrating typical motor driven machine tools. Short discussion. 11500 w. Pro W Ry Club—Sept. 17, 1912. No. 36970 C.

An Analysis of Wood Working Machines. L. R. Pomeroy. Information concerning tools required in a car repair shop for general repairs to 70 passengers and 714 freight cars per month. 1500 w. Am Engr—Oct., 1912. No. 36516 C.

Steel Car Shop Kinks. Illustrates and describes special devices and methods. 1200 w. Am Engr—March, 1912. No. 31059 C.

Locomotive Machine Shop Kinks. R. E. Dette. Prize paper. Illustrated descriptions of devices and methods. 1000 w. Am Engr—March, 1912. No. 31061 C.

Machining Locomotive Cylinders. Franklin D. Jones. Illustrates and describes practice at the Juniata shops of the Pennsylvania R. R. 2500 w. Mach (Ry Ed)—April, 1912. No. 31862 C.

Repairing Driving Boxes. H. Wanamaker. Illustrates and describes methods used at the Depew, N. Y., shops. 500 w. Am Engr—Aug., 1912. No. 34936 C.

See also same heading, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Shops

Methods of a Georgia Railway Shop. Ethan Viall. Describes interesting shop devices and methods. Ills. 1500 w. Am Mach—July 25, 1912. No. 34738.

North-Eastern Railway Company's New Boiler Shop at Darlington. Illustrated detailed description. 1500 w. Engr, Lond —Dec. 29, 1911. No. 29622 A.

The North-Eastern Railway's New Locomotive Boiler Shop. Illustrated detailed description of the new boiler shop at Stooperdale, Darlington. 1800 w. Ry Gaz, Lond—Aug. 23, 1912. No. 35748 A.

Extension of the Locomotive Department at Ashford. Plan and description of additional shops for the South-Eastern and Chatham Railway. 1200 w. Engr, Lond—Feb. 9, 1912. No. 30677 A.

"Katy" Line Shops at Parsons, Kansas. F. A. Stanley. Illustrates and describes interesting machines, tools, and methods seen in these shops. 1200 w. Am Mach—March 7, 1912. No. 31071.

The Westinghouse Air Brake Shops. Ethan Viall. Illustrates and describes tools and shop operations on air and pump cylinders, and hose couplings. 2000 w. Am Mach—April 11, 1912. No. 31858.

The New Freight Car Shops at Recklinghausen (Die neue Güterwagen-werkstätte in Recklinghausen). Herr Rutkowski. Details of yard facilities and shop construction designed to effect rapid repairs to freight cars. Ills and diagrams. Serial. 1st part. 6000 w. Glasers Ann—Apr. 1, 1912. No. 32032 D.

Construction Features of the Watervliet Shops of the Delaware & Hudson Company. O. D. Lee. Illustrated description. 4500 w. Cassier's Mag—May, 1912. No. 33031 B.

Woodworking Shops of the Hocking Valley Railway. Illustrates and describes an electrically operated plant used in maintenance of wooden cars. 2000 w. Wood Craft—May, 1912. No. 32600.

See also Routing Systems, under INDUSTRIAL ECONOMY; Electric Power, under ELECTRICAL ENGINEERING, *Power Applications*, and Shops, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Smoke Pevention

The Problem of Smoke Abatement So Far as It Relates to Steam Railroads. William A. Hoffman. Discusses the problem of eliminating smoke, the value of smoke-abating devices, inspection, etc. General discussion. 5000 w. Pro St Louis Ry Club—June 14, 1912. No. 34369.

Railway Smoke Abatement in Chicago. Compiled and condensed from a statement submitted to the Chicago Assn. of Commerce. The history of smoke abatement in Chicago is reviewed. 3000 w. Eng News—Jan. 11, 1912. No. 29537.

Prevention of Smoke. T. A. Lawes. Illustrates and describes the equipment the writer considers necessary to prevent the emission of dense smoke. 1500 w. Ry & Loc Engng—Feb., 1912. No. 30139 C.

Tests in Smoke Abatement on Santa Fe Switching Locomotives. Reports tests of a Chicago committee made to obtain an exact record of smoke from switching engines in service, and the size of cinders thrown out. Ills. 2500 w. Ry Age Gaz—Feb. 23, 1912. No. 30725.

Elimination of Smoke from Locomotives. D. R. MacBain. Methods used on large switching locomotives. 1700 w. Ry Age Gaz—Oct. 11, 1912. No. 36766.

See also Smoke, under CIVIL ENGINEERING, *Municipal.*

Spark Arresters

Locomotive Spark Arresters (Funkenflug-schaden der Dampflokomotiven). Herr Winkler. General review of the progress made in fire protection from spark prevention. 3500 w. Glasers Ann —Mar. 5, 1912. No. 32005 D.

Lignite Fuel for Locomotives. Illustrated description of the Gyrus spark arrester, applied to the locomotive smoke box when burning lignite coal. 400 w. Ry Age Gaz—Jan. 19, 1912. No. 29847.

Springs

Laminated Bearing Springs. William Ernest Dolby. Mathematical study of the design, giving results of experiments on bearing springs. Ills. 3500 w. Inst of Civ Engrs—No. 3934. No. 29966 N.

Standardization

Report of Standing Committee on Revision of M. C. B. Rules of Interchange. Gives report and discussion. 7500 w. Pro Ry Club of Pittsburgh—March 22, 1912. No. 32404 C.

Steel Cars

The Steel Passenger Cars in the Odessa Wreck on the St. Paul. An illustrated account of the damage to the steel cars in this accident and the lessons to be learned. 1600 w. Ry Age Gaz—Jan. 19, 1912. No. 29847.

Steel Coaches; Baltimore & Ohio. Illustrated description of passenger cars, seating 80 passengers. 500 w. Ry Age Gaz —Dec. 29, 1911. No. 29270.

Steel Observation Car for the Panama Limited of the Illinois Central. Illustrated detailed description. 400 w. Ry Age Gaz—Jan. 12, 1912. No. 29552.

Theory and Practice of the Painting of the Modern Steel Passenger Car. J. W. Lawrie. Read before the Int. Cong. of Ap. Chem. Describes tests made and the results, showing the theory as applied with some success on a large scale. 3500 w. Eng News—Oct. 3, 1912. No. 36574.

Steel Passenger Cars on American Railways (Der Bau eiserner Personenwagen auf den Eisenbahnen der Vereinigten Staaten von Amerika). F. Gutbrod. Gives details of construction. Serial. 1st part. 4600 w. Zeit des Ver Deutscher Ing—Dec. 2, 1911. No. 29756 D.

Storekeeping

Fundamental Principles of Railway Storekeeping. George G. Yeomans. An argument for departmental organization. 2500 w. Ry Age Gaz—June 21, 1912. No. 33871.

Superheaters

The Development of the Superheater in Locomotives. Illustrates and describes the mechanical construction of the Schmidt superheater, reviewing its development. 1500 w. Ry & Loc Engng—June, 1912. No. 33398 C.

Locomotive Superheaters. S. G. Winn. First article of a series discussing in detail the principles and the types of superheaters for locomotives. 1500 w. Mech Wld—May 24, 1912. Serial. 1st part. No. 33456 A.

Temperature Tests on Superheater Locomotives. Gives particulars of some tests carried out in Russian railways by Prof. Lomonsoff and M. Czeczott. Ills. 700 w. Engng—July 26, 1912. No. 35168 A.

The Use of Highly Superheated Steam in Locomotives. Gilbert E. Ryder. Presents the advantages claimed and illustrates and describes a superheater and gives general discussion. Ills. 10500 w. S & S-W Ry Club—Jan, 1912. No. 32457 D.

Superheated Steam in Locomotive Service. W. F. M. Goss. A review of publication No. 127 of the Carnegie Inst. of Washington. Gives results of a study of recent German practice in the use of superheated steam, and results of tests made on an American Locomotive. Ills. 66 pages. Univ of Ill, Bul 57—April 22, 1912. No. 33808 N.

See also Locomotive Tests, under *Motive Power and Equipment;* and Superheaters, under MECHANICAL ENGINEERING, *Steam Engineering.*

Switch Engines

The New Switch Engines of the Prusso-Hessian Railway System (Die neue Verschiebelokomotive der preussich-hessischen Staatseisenbahnverwaltung). Herr Bergerhoff. Description of this new type. Ills. and plate. 1200 w. Zeitschr d Ver deutscher Ing—May 4, 1912. No. 33569 D.

Tank Cars

Large Capacity Tank Car. Illustrated description of an experimental tank car of 14650-gals. capacity to determine utility and commercial value of such a large size. 500 w. Ry Age Gaz—Dec. 8, 1911. No. 28686.

Testing Methods

The Material Testing Department of a Railroad. E. B. Tilt. Abstract of a paper before the Can. Ry. Club. Notes on the progress of metallurgy and of testing metals. 4000 w. Castings—July, 1912. No. 34685.

The Test Department of a Railway. E. B. Tilt. Abstract of a paper read before the Canadian Ry. Club. Considers the duties of a railway engineer of tests and the work of the railway testing laboratories. 3500 w. Mech Engr—June 28, 1912. No. 34321 A.

Tires

Tests on the Hardness of Tire Material by the Kohn-Brinell Method (Harteuntersuchungen an Radreifenstoff nach dem Kohn-Brinellschen Kugeldruckverfahren). Editorial on the advisability of using this method. 2500 w. Stahl u Eisen—Mar. 21, 1912. No. 32010 D.

An Electrical Process for Heating Tires (Das Anwärmen von Radreifen auf elektrischen Wege). R. Börnecke. A process for tire heating preparatory to shrinking on car wheels. Ills. 2100 w. Stahl u Eisen—March 14, 1912. No. 32008 D.

See also Boring Machines, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Trailers

Pittsburgh Trailers and Their Lessons. John P. Fox. Illustrated description of trailers used, providing 62 seats, and, with the motor car, 119 seats. 1500 w. Sci Am—Feb. 24, 1912. No. 30738.

Trains

Vestibuled Corridor Trains. Illustrated description of a finely equipped train on the London, Tilbury & Southend Ry. 400 w. Ry Gaz, Lond—Jan. 26, 1912. No. 30311 A.

Train Heating

Heating Trains by Means of Air Pump Exhaust. Illustrates and describes a special valve, called the "Econotherm," which automatically diverts steam from the air pump exhaust, into the train heating system, without increasing the back pressure. The essential parts of the system are described. Ills. 2500 w. Ry & Engng Rev—July 13, 1912. No. 34450.

Train Lighting

Electric Lighting of Railway Trains: The Brake Vehicle Method. Roger Thomas Smith. With an abstract of discussion. Reviews the history of electric lighting of trains in England, and describes the system in use on the Great Western Ry. Diagrams. 102 pages. Inst of Civ Engrs, No. 3938—May, 1912. No. 33169 N.

The Electric Lighting of Railway Trains: the Brake-Vehicle Method. Roger T. Smith. Abstract of paper before the Inst. of Civ. Engrs. Considers the method used on the Gt. West. Ry. where axle-driven dynamos and accumulators are installed on some of the coaches only. 3500 w. Elect'n, Lond—Dec. 1, 1911. No. 28754 A.

A Recently Installed System of Train Lighting. Illustrates and describes a system developed at Silvertown, England, in which the dynamo is driven by the coach axle. 1000 w. Sci Am Sup—April 13, 1912. No. 31949.

The Silvertown Train Lighting Equipment. Illustrates and describes the mechanical and electrical details. 3000 w. Engr, Lond—Nov. 24. 1911. No. 28671 A.

Train Lighting (Illuminazione elettrica dei treni). E. Biffi. Discusses various problems and solutions. 2400 w. Monit Tec—Dec. 20, 1911. No. 29812 D.

Head End Electric Train Lighting. C. R. Gilman. Brief illustrated description of this system and its working, with general discussion. 8000 w. Pro W Ry Club—Jan. 16, 1912. No. 31296 C.

Introduction and Development of Electric Train Lighting on the Former Kaiser Ferdinands-Nordbahn (Einführung und Entwicklung der elektrischen Zugbeleuchtung bei der ehemaligen Kaiser Ferdinands-Nordbahn). F. Bach. Description of the various systems employed at different times, batteries, accumulators, dynamos, etc. Ills. 5600 w. Elek u Masch—May 26, 1912. No. 33538 D.

A New System for the Electric Lighting of Trains. P. Amsler. Trans. from *Elektrotechnische Zeit.* Describes a method elaborated by the writer which has given excellent results under test. 1200 w. Elect'n, Lond—Aug. 16, 1912. No. 35460 A.

See also Lamps, under ELECTRICAL ENGINEERING, *Lighting*.

Train Resistance

The Effect of Cold Weather Upon Train Resistance and Tonnage Rating. Edward C. Schmidt and F. W. Marquis. Gives results of tests made to determine the increase in the resistance of freight trains during cold weather. 24 pages. Univ of Ill, Bul 59—May 27, 1912. No. 33948 N.

Trucks

The Summer's Balanced Side-Bearing Truck. E. W. Summers. Illustrated description, followed by general discussion. 6000 w. Pro Ry Club of Pittsburgh—Sept. 22, 1911. No. 28384 C.

Freight Car Truck Experiments. Abstract from paper by George G. Floyd, describing features of the tests made by Prof. L. E. Endsley. 2500 w. Ry Age Gaz—Dec. 1, 1911. No. 28570.

Valve Gears

Switching Locomotives with Improved Valve Gears. Illustrated description of applications of the Baker-Pilliod and the Walschaerts valve gear. 1000 w. Eng News—Aug. 1, 1912. No. 35040.

Setting the Walschaerts Valve Gear. Illustrates and describes practice in the erecting department of Baldwin Locomotive Works, Philadelphia, Pa. 3500 w. Mach (Ry Ed)—Oct., 1912. No. 36748 C.

The Upkeep of Piston Valves on the Locomotives of the Compagnie de l'Est (L'Entretien des Tiroirs Cylindriques des Locomotives de la Compagnie de l'Est). M. E. Bernard. Discussion of methods and costs. Ills. 6050 w. Rev Gen des Chemins de Fer—May, 1912. No. 32757 G.

See also same heading, under MECHANICAL ENGINEERING, *Steam Engineering*.

Wheels

Excessive Car Wheel Loads. Editorial discussion of the proposed use of 80-ton freight cars with 4-wheel trucks for special service. 1500 w. Ry Age Gaz—Dec. 22, 1911. No. 29159.

Has the Cast-Iron Wheel Reached Its Limit of Usefulness? W. J. Morrison. An address indicating that there are no reasons for believing chilled iron wheels have reached their limitations. Discussion. 6000 w. Pro So & S-W Ry Club—March, 1912. No. 33188 C.

The Impact of Flat Wheels Upon Rails. C. H. Benjamin. Remarks on the failures of steel rails, and the investigations to be made to determine the laws of impact under different conditions. 1200 w. Ry Age Gaz—June 28, 1912. No. 34126.

Effect of Wheel Coning on Sharp Flanges. Gives diagrams showing there has been great diminution in the breakage of flanges since the adoption of the standard coming 1 in 20 for car wheels. 500 w. Ry Age Gaz—July 17, 1912. No. 34665.

Mixtures for Chilled Car Wheels. Gives comparisons showing the longer life of old-time charcoal product. Ills. 3500 w. Ir Age—May 16, 1912. No. 32899 C.

Locomotive Wheels. Describes old and modern wheels, keyways, tyres, etc. Ills. 2000 w. Mech Wld—June 28, 1912. No. 34325 A.

Wheel and Journal Maintenance on New York Subway. Illustrated description of the construction and methods of maintenance of wheels and journals in severe service. 2500 w. Elec Ry Jour —July 27, 1912. No. 34878.

NEW PROJECTS

Alaska

Construction of the Copper River & Northwestern. Illustrated account of the construction of a railway from the coast to the interior of Alaska. 4000 w. Ry Age Gaz—Feb. 2, 1912. No. 30199.

Railroad Building in Alaska. Day Allen Willey. Illustrated account of the construction of the Copper River Railroad, and the remarkable problem in bridge building. 1700 w. Sci Am Sup—July 13, 1912. No. 34365.

Australia

Australia's Trans-Continental Railway. H. K. Ellison. Reviews the history of this work which is about to be executed. 2000 w. Jour Roy U Serv Inst—June, 1912. No. 34191 N.

First Transcontinental Railroad in Australia. C. O. Burge. Information concerning a line to be built from Port Augusta to Kalgoorlie, 1063 miles in length. Map. 1600 w. Eng Rec—Sept. 28, 1912. No. 36401.

Bagdad Railway

The Bagdad Railway and Why It is of Interest to the United States. Albert Gleaves. Discusses the effect of this railway connecting Constantinople with the Persian Gulf, upon German emigration, and upon trade relations, etc. Map. 6500 w. Pro U S Nav Inst—June, 1912. No. 33973 E.

The Baghdad Railway. Percy F. Martin. A letter considering the British policy and German and American interests. 1500 w. Ry Gaz, Lond—Feb. 9, 1912. No. 30661 A.

The Bagdad Railway (Die Bagdadbahn). Stephen Strakosch. Reviews the diplomatic situation for the construction of this road, now assured. Map. 4000 w. Zeit d Oest Ing u Arch Ver—July 19, 1912. No. 35532 D.

Brazil

Notes on a Costly Brazilian Railway Line. A. E. Hess. Illustrated account of the building of the Estrada de Ferro Madeira e Mamoré line. 4000 w. Eng News —Sept. 26, 1912. No. 36360.

Cable Railways

The Niesen Railway (Die Niesenbahn). R. Zehnder-Spörry. Illustrates and describes the electrical, constructive, and operative features of this picturesque road. Serial 1st part. 3800 w. Elek kraft u Bahnen—July 4, 1912. No. 35558 D.

Recent Funicular Railway Construction in Switzerland (Costruzioni recenti di funicolari in Swizzera). General description of the Niesen funicular. Ills. 3000 w. Ingeg Ferro—July 31, 1912. No. 35600 E.

Canada

Canadian Transcontinental Railway. Map and illustrated description of the construction work and its difficulties, with some economic considerations. 9000 w. Eng News—June 27, 1912. No. 34110.

Extensions and Improvements, Canadian Northern Ry. Map and illustrated description of work on this road. 1500 w. Ry & Engng Rev—June 1, 1912. No. 33388.

New Links in the Canadian Northern Railway System. Map and information regarding the new lines. 1200 w. Eng News —Nov. 9, 1911. No. 27759.

See also Grand Trunk Pacific, under *New Projects*.

Chile

Arica-La Paz Railway. Percy F. Martin. An illustrated account of the great physical difficulties and heavy cost of construction of this line built by the Chilian Government. 2500 w. Engr, Lond—Nov. 3, 1911. No. 28041 A.

The Longitudinal Railway of Chíle. Illustrations, sections and description of heavy railway construction in progress with history of the scheme. 1600 w. Engr, Lond—Jan. 19, 1912. No. 30179 A.

China

Notes on the Chinese Railways. J. Simon. Reviews the history of the introduction of railways. Maps. 10900 w. Bul Int Ry Cong—April, 1912. No. 32359 G.

Some Chinese Beginnings in Railway Engineering and in Engineering Teaching. Frank A. Foster. An account of the small beginning and development of railways in China, and of the College established by the Imperial Chinese Railways. Ills. 2000 w. Jour Worcester Poly Inst—Nov., 1911. No. 28251 C.

The Canton-Hankow Railway. H. L. Bodwell. An illustrated detailed account of the construction of this line. 3500 w. Can Engr—Nov. 9, 1911. No. 27968.

The Kwangtung Section of the Canton-Hankow Railway. An illustrated account of the construction and operation of the portion of the line compelted. 6000 w. Far East Rev—Dec., 1911. No. 30290 N.

The Tcheng T'aï Line of the Chinese Imperial Railway Co. (Compagnie Impériale des Chemins de Fer Chinois Ligne du Tcheng T'aï). M. G. Millorat. Description of line and history of construction. Plate. 7000 w. Mem Soc Ing Civ de France—Nov., 1911. No. 30594 D.

The Peking-Kalgan Railway. F. C. Coleman. Brief illustrated description of the first railway financed, engineered and built solely by Chinese. 2000 w. Sci Am —Nov. 4, 1911. No. 27660.

China's Most Modern Railway. Lewis R. Freeman. An illustrated account of the Shanghai-Nanking railway. 3500 w. Ry Gaz, Lond—Oct. 27, 1911. No. 27723 A.

Colorado & Southern

Colorado & Southern Extension to Cheyenne. Explains conditions that led to the construction of the recently completed line from Dixon to Cheyenne, and describes the work. Map & Ills. 1000 w. Ry Age Gaz—Nov. 3, 1911. No. 27688.

Cut-Off

Soo Line Cut-Off from New Richmond to Withrow. Gives map showing the location of the old line and the new, with illustrated descriptions of interesting work. 1600 w. Ry Age Gaz—Dec. 1, 1911. No. 28565.

Harriman Lines Spokane-Ayer Cut-Off. Map and illustrated description of heavy construction work on the new line of the Oregon-Washington R. R. & Nav. Co. 3000 w. Ry Age Gaz—May 31, 1912. No. 33337.

Building a New Coal Road Across Iowa. Illustrated description of the Allerton-Carlisle line of the Rock Island. 2000 w. Eng Rec—Aug. 31, 1912. No. 35658.

East Indies

The Proposed Government Railway in the Dutch East Indies, and the Railway Plans for South Sumatra (Eenige mededeelingen over den aanleg van Staatsspoorwegen in Ned. Oost-Indië en over het spoorwegplan in Zuid-Sumatra). R. P. O. D. Wijnmalen. Description of proposed routes. Ills. and map. 11800 w. De Ingenieur—May 25, 1912. No. 33585 D.

Extensions

Two Railway Extensions in Ontario. R. S. McCormick. Gives the history and construction details of the completion of the Algoma Central & Hudson Bay and the Algoma Eastern. Ills. 3000 w. Ry Age Gaz—July 5, 1912. No. 34254.

Finance

Preliminary Investigation of New Railway Projects. A. M. Van Auken. Aims to suggest a plan by which investors may form a fair judgment of the enterprise. 3300 w. Ry Age Gaz—March 8, 1912. No. 31103.

Florida East Coast Ry.

"Over-Sea Railroad" Completed to Key West. George Byrne. Illustrated account of this remarkable line, having a concrete viaduct 2.7 miles long, over the keys of Florida. 3500 w. Mfrs Rec—Jan. 4, 1912. No. 29862.

To Sea by Rail. M. B. Claussen. Illustrated account of the Key West extension of the Florida East Coast Ry. 2000 w. Cassier's Mag—March, 1912. No. 31190 C

The Florida East Coast Extensions. Frank M. Patterson. Gives the history of the Key West project, details of novel and difficult construction, and discusses operating prospects. Ills. 4500 w. Ry Age Gaz—May 10, 1912. No. 32693.

Grand Trunk Pacific

Construction Work on the Grand Trunk Pacific Ry. Detailed description of extensive work, with many illustrations and information of interest. 11500 w. Ry & Engng Rev—March 16, 1912. No. 31224.

The Grand Trunk Pacific Railway. Brief illustrated account of the development of this important line, wholly within Canadian territory. 900 w. Can Engr—April 25, 1912. No. 32441.

Palmer-Providence Line of Grand Trunk. H. Cole Estep. Map and description of a New England extension of the Grand Trunk Ry. system under construction. 1800 w. Ry Age Gaz—Aug. 23, 1912. No. 35405.

Hudson Bay Project

The Hudson Bay Railway Project and the "Titanic" Disaster. Calls attention to the risks attendant on this enterprise, and the dangers of navigation on the proposed route. Map. Extract from official report to the Canadian government. 4500 w. Eng News—May 2, 1912. No. 32569.

The Hudson Bay Route: A New Outlet for Canadian Wheat. Avard Longley Bishop. Abstract of an article in the *Yale Rev.* Explains the proposed route and discusses the difficulties and general outlook for the project. 4000 w. Ry Age Gaz—April 26, 1912. No. 32377.

Construction of the New Lines of the Algoma Central & Hudson Bay Railway. R. S. McCormick. Describes railway building toward Hudson Bay from the Sault across three transcontinental roads. Maps. 3500 w. Eng Rec—June 8, 1912. No. 33625.

Ireland

Cork City Railways. Explains the situation, giving map, and describes a new line which improves connections. Ills. 4000 w. Engr, Lond—Jan. 12, 1912. No. 29914 A.

Italy

The Penetration of Rome by the Rome-Ostia Railway (Penetrazione in città della Ferrovia Roma-Ostia-Mare). F. Mora. Proposal for a more direct route through Rome, and comparisons with other projected routes. Map. 2700 w. Ann d Soc d Ing e d Arch Ital—July 1, 1912. No. 35593 E.

The Rome-Ostia Railway (Ferrovia Roma-Ostia). Luigi Botto. An account of the construction of the line with its tunnels in Rome, and its commercial possibilities. Ills. Maps and Plates. 5000 w. Ann della Soc d Ing e d Arch Ital—Dec. 1, 1911. No. 30631 E.

Project for a New Direct Line from Northern Italy to Rome Through the Falterona (Per una nuova direttissima fra il Nord d'Italia e Roma attraverso il Falterona). Dante Fiorentini. Description of proposed route and tunnel, with map and profile. 7200 w. Monit Tec—July 10, 1912. No. 34590 D.

A Direct Line from Genoa to Milan (Sulla direttisima Genova-Milano). Nino Ronco. Suggestions for the route of this projected line. 300 w. Ann d Soc d Ing e d Arch Ital—July 15, 1912. No. 35594 E.

M., S. & N. W.

Construction of the Milwaukee, Sparta & Northwestern. Map and illustrated description of this new line and the improvements in operation. 4000 w. Ry Age Gaz—March 1, 1912. No. 30961.

New Lines

Railroad Building in the South in the Past Year. Samuel G. Wilmer. Gives details of construction during the year and that proposed for next year. 5000 w. Mfrs' Rec—Dec. 28, 1911. No. 29247.

New York

New York Central's West Side Improvements in New York City. Map, illustrations, and description of proposed changes. 1000 w. Ry Gaz, Lond—Nov. 3, 1911. No. 28022 A.

Oregon

The Construction of the Oregon Trunk and Des Chutes Railways in Central Oregon. An illustrated account of the building of these two competitive lines. 3500 w. Ry Age Gaz—March 22, 1912. No. 31463.

Heavy Work on Spokane-Portland Short Line. Illustrates and describes work on a new line along Palouse and Snake Rivers. 1200 w. Eng Rec—July 20, 1912. No. 34676.

Panama

Gold Hill Relocation of Panama Railroad. Abstract from the annual report of the Isthmian Canal Commission illustrating and describing the work. 1500 w. Ry Age Gaz—Feb. 16, 1912. No. 30456.

The Panama Railroad. Percy F. Martin. A detailed description of its efficient reconstruction and maintenance, and review of its history. 3000 w. Engr, Lond—June 14, 1912. Serial. 1st part. No. 33943 A.

Reconstruction of the Panama Railroad. Gives facts as to the cost of the work and the present and prospective traffic, taken from a recent report of the railroad. 1200 w. Ry Age Gaz—July 5, 1912. No. 34255.

South Africa

The Benguella Railway. A Shortened Route to the Transvaal. J. Hartley Knight. Map and illustrated description of engineering construction under unusual conditions. 1800 w. Engineering Magazine—July, 1912. No. 33966 B.

Switzerland

New Lines of the Rhäetian Railway, Ilanz to Disentis and Bevers to Schuls (De neuen Linien der Rhätischen Bahn, Ilanz-Disentis und Bevers-Schuls). S. Saluz. Describes projected continuations from main lines at Davos, running east and west. First part considers the Ilanz-Disentis line. Ills. Serial. 1st part. 2900 w. Schweiz Bau—April 20, 1912. No. 32714 D.

See also Suspension, under CIVIL ENGINEERING, *Bridges*.

Trans-African

The Proposed Trans-African Railway (Le Project de Chemin de Fer Trans-africain). Robert Doucet. Studies on proposed routes for such a project, connecting with such lines already constructed. Maps. 3000 w. Questions Diplomatiques et Coloniales—Apr. 1, 1912. No. 32075 D.

Transandine Ry.

The First Trans-Continental Railway in South America, from the Atlantic to the Pacific. F. C. Coleman. Illustrations, with brief description of the Transandine railway and tunnel. 1500 w. Sci Am—Jan. 27, 1912. No. 30061.

The First Transandine Railway. F. T. McGinnis. Describes the many projects attempted and the final completed construction. 2000 w. Eng News—Jan. 4, 1912. No. 29389.

Tripoli

A Railway in Tripoli. An illustrated account of the construction of a railway in Tripoli by the Italians. 2500 w. Engr, Lond—May 24, 1912. No. 33468 A.

Railways in Libya and Contiguous Regions (Le ferrovie nelle Libia e nelle regioni contigue). F. Agnello. Reviews construction difficulties under desert conditions, and economic problems. Maps. 2700 w. Ann della Soc d Ing e d Arch Ital—May 1, 1912. No. 34009 E.

Yukon

Rainy Hollow, B. C., and Southwestern Yukon. E. Jacobs. Information concerning this country and resources through which it is proposed to construct a railway. Ills. 4000 w. Can Min Jour—July 15, 1912. No. 34640.

PERMANENT WAY AND BUILDINGS

Accounting

Cost Accounting in the Engineering Department. C. D. Passage Explains the system of accounting developed on the Northern Pacific for construction and maintenance work. 4000 w. Ry Age Gaz—Sept. 27, 1912. No. 36390.

Ballast

Physical Testing of Broken-Stone Ballast. A. T. Goldbeck and F. M. Jackson. Read at Cong. Inst. Assn. for Testing Materials. Also editorial. Information of tests and results, with subjects of related interest. 4000 w. Ry & Engng Rev—Sept. 28, 1912. No. 36411.

Notes on Contract Ballasting, Missouri Pacific Ry., Including Tables for Calculating Volume of Ballast Applied; Also Cost and Progress Recording Forms Used. D. W. Stradling. 6000 w. Engng & Con—March 20, 1912. No. 31456.

A Gravel Washing Plant for Railway Ballast; Structural Details and Methods and Cost of Operation. Illustrated description of a plant located 57 miles from Richmond, Va. 1600 w. Engng & Con—March 27, 1912. No. 31616.

Comparison of Methods of Loading Gravel. Illustrates and describes several methods depending on local conditions and the amount of ballast needed. 3000 w. Ry Age Gaz—Nov. 11, 1911. No. 28078.

Bridges

Outline History of Railway Bridge Building in the U. S. J. G. Van Zandt. Interesting illustrated review. 7000 w. Ry Engng & Main of Way—Oct., 1912. No. 36853.

See also under CIVIL ENGINEERING, *Bridges*.

Buildings

Cost of Railway Buildings of Concrete and Brick. Describes examples of structures and their cost, indicating general practice and discussing the relative merits. 1800 w. Engng & Con—Oct. 23, 1912. No. 36963.

Carhouse

Middletown Carhouse of the Connecticut Company. Illustrates and describes a combined carhouse and shop. 1200 w. Elec Ry Jour—Feb. 3, 1912. No. 30250.

Coaling Stations

600 Ton Reinforced Concrete Coaling Station. H. S. Shimizu. Illustrated description of a station on the B. & O. R. R. at Sir Johns Run, W. Va. 1100 w. Am Engr & R R Jour—Nov., 1911. No. 27767 C.

A Reinforced Concrete Locomotive Coaling Station. Plan, elevation, and description of a station replacing a wooden structure on the B. & O. Ry. at Deshler, O. 2000 w. Eng Rec—Feb. 3, 1912. No. 30256.

Concrete Coaling Station. C. P. Ross. Illustrated description of a station at Louisville, Ky. 800 w. Ry Age Gaz—Oct. 18, 1912. No. 36885.

Construction

Construction of the Bingham & Garfield. Illustrated description of the construction of a 20-mile line in Utah, built mainly for ore transportation, but carrying on a general passenger and freight business. 1500 w. Ry Age Gaz—March 29, 1912. No. 31635.

Difficult Work on a Mining Railroad in Utah. Illustrated description of work on the Bingham & Garfield Railway which ascends steep sides of a canyon involving heavy side hill construction and high viaducts. 2500 w. Eng Rec—Aug. 17, 1912. No. 35252.

Twin City—Twin Ports Line of the Soo. Map and illustrated description of the construction of the closing section of the direct low grade route from St. Paul and Minneapolis to Superior and Duluth. 2000 w. Ry Age Gaz—April 12, 1912. No. 31944.

A Method of Dealing with a Railway-Cutting in Bog. George Hemingway Mills. A short account of new work as carried out in Ireland, so as to secure a safe roadbed. Ill. 1800 w. Inst of Civ Engrs, No. 3965 — May, 1912. No. 33167 N.

Difficulties in Constructing the Little Rock Southern Ry. J. M. Stark. Abstract of a paper before the Engng. Assn. of the South. Detailed account of the work. 3000 w. Eng News—July 25, 1912. No. 34793.

Construction of the Rock Island Short Line. Maps and illustrated description of the building of the closing link in a new direct road between Kansas City, Mo., and St. Paul, Minn. 2800 w. Ry Age Gaz—Oct. 25, 1912. No. 37000.

The Line Andelot to La Cluse (La Ligne d'Andelot a la Cluse). Maurice Honoré. Review of the construction of this mountain road, numerous viaducts, embankments, etc. Ills. and Plate. 2200 w. Génie Civil—Sept. 14, 1912. No. 36678 D.

Constructing the Bodensee-Toggenburg Railway (Vom Bau der Bodensee-Toggenburgbahn). Engineering difficulties attending the construction of this low-gradient track. Ills. Serial. 1st Part. 3000 w. Schweiz Bau—Sept. 21, 1912. No. 36618 D.

Construction Kinks

A Collection of Construction Kinks. Papers contributed by various writers in a prize contest. 6000 w. Ry Age Gaz—Dec. 15, 1911. No. 29012.

Curves

Compensating Grades for Curvature. Gives a compilation of the statements of different writers and the practice of several railways. Also editorial. 9000 w. Eng News—Aug. 15, 1912. No. 35233.

Vertical Curves, Spirals, and Connecting Spirals for Meter-Gage Railways. Lee Fraser. Gives tables and instructions published by the Autofogasta & Bolivia Ry. Co. for the use of its engineers. 2000 w. Eng News—Sept. 5, 1912. No. 35836.

See also same heading, under STREET AND ELECTRIC RAILWAYS.

Drainage

Heavy Drainage Work on the Pennsylvania Railroad Near Petersburg, Pa. An account of difficulties encountered at Neff's Cut, Pa., and the remedies applied, with cost. Ills. 1000 w. Ry Age Gaz—May 17, 1912. No. 32925.

Electric Power

The Use of Electricity on Railways. E. M. Herr. Abstract of an address at the dinner of the Am. Ry. Guild, N. Y., May 14, 1912. Discusses its future application to transportation, particularly through the development of large central power stations. 2500 w. Ry Age Gaz—July 5, 1912. No. 34257.

The Use of Electric Power for Starting Machine Engines in Stations, Depots, Shops, etc. (Quelques Réflexions sur l'Emploi de l'Energie Electrique pour la Mise en Action des Engines Mécaniques dans les Gares, les Dépots, les Ateliers, etc). Notes on the power consumption for this work. Diagrams. 3300 w. Rev Gen des Chemins de Fer — May, 1912. No. 32756 G.

Embankments

Two Methods of Constructing Railway Embankment Over Soft Ground. Describes the embankment across Muskegs, Canada, and the embankment across Panama swamps, as illustrating the two methods. Ills. 700 w. Engng & Con—June 12, 1912. No. 33705.

The Protection of Railway Embankments. A. M. Van Auken. Describes methods adopted by different roads to prevent damage to fills by standing on flowing water. Ills. 2200 w. Ry Age Gaz—Oct. 11, 1912. No. 36770.

Methods of Embankment Protection. From the report of a committee to the Am. Ry. Bridge & Bldg. Assn. Illustrated detailed description of practice. 6000 w. Ry & Engng Rev—Jan. 27, 1912. Serial. 1st part. No. 30073.

Embankments and Foundations. A. C. Oxley. Read before the Can. Soc. of Civ. Engrs. Describes the construction of roadbed from Bolton to Byng Inlet. Ills. 2500 w. Can Engr—May 9, 1912. No. 32818.

The Embankment Slide in the Ziersdorf-Eggenburg Section of the Kaiser Franz Josef Railway (Die Rutschungen in dem Abschnitte Ziersdorf-Eggenburg der Kaiser Franz Josef-Bahn). Hans Raschka. Illustrates the cause of the slide through improper bonding of material. 2800 w. Zeit d Oest Ing u Arch Ver—Sept. 6, 1912. No. 36634 D.

Engine Houses

Rectangular and Circular Engine Houses. Considers the advantages of the rectangular type, and discusses designs. 2500 w. Eng News—Oct. 24, 1912. No. 36997.

Cedar Hill Engine House Facilities, New York, New Haven and Hartford R. R. J. M. Sullivan, Jr. Illustrated detailed description of work under construction at New Haven, Conn. 4000 w. Eng News—Aug. 22, 1912. No. 35398.

Extension

Building a Coal Road Extension Through the Pennsylvania Mountains. Illustrated description of the Lehigh & New England Railroad's new line to Tamaqua involving some difficult grading and a large bridge over the Lehigh River. 3000 w. Eng Rec—July 6, 1912. No. 34275.

Fire Protection

Protection of Wooden Bridges from Fire. Discusses causes of fires and methods of protection. Ills. 3000 w. Ry Age Gaz—Dec. 15, 1911. No. 29013.

See also same heading, under CIVIL ENGINEERING, *Construction*.

Freight House

Freight House with Mechanical Handling Plant, for the M., K & T. Ry., at St. Louis. A freight house equipped with a telpher system is illustrated and described. 1000 w. Ry & Engng Rev—Nov. 11, 1911. No. 27997.

Gage

The Unification of Australian Gauges. Reviews the discussion and decision recommending a standard guage of 4 ft. 8½ in. 1600 w. Ry Gaz, Lond—Dec. 22, 1911. No. 29458 A.

Grade Crossings

Grade Elimination and Bridges. Henry Grattan Tyrrell. Illustrates and describes methods of track elevation and bridges at street crossings. 2000 w. Can Engr—May 23, 1912. No. 33141.

Modern Crossing Design. F. W. Rizer. Explains the advantages of having a standard plan, and present practice in regard to construction. 1700 w. Ry Age Gaz—Sept. 20, 1912. No. 36077.

Grade Separation at Grand Crossing. Illustrates and describes complicated construction work in connection with track elevation and subway work in Chicago. 3000 w. Ry Age Gaz—May 3, 1912. No. 32572.

Union Station and Grade Separation in Joliet. Illustrates and describes the extensive work involved in elevating tracks and providing for increased passenger service. 3500 w. Ry Age Gaz—April 5, 1912. No. 31802.

Guide Fences

Sheer Booms and Guide Fences at Bridges Crossing the Upper Mississippi River from St. Paul to the mouth of the Missouri. C. W. Durham. Illustrated detailed descriptions. 1500 w. Engng & Con—Aug. 7, 1912. No. 35076.

Logging Roads

Building Railroads to Develop Lumber Districts in Arkansas. A. M. Van Auken. Also editorial. Discusses the economies of location and construction of logging railroads and their relation to steam railroads. Ills. 2000 w. Ry & Engng Rev—July 20, 1912. No. 34697.

Maintenance

Improved Maintenance Methods in 1911. A number of prize papers reviewing the maintenance work of the past year. 5000 w. Ry Age Gaz—Jan. 19, 1912. No. 29851.

Winter Maintenance Difficulties on Northern Railways. E. R. Lewis. Remarks on the preparations necessary and devices used to keep the tracks clear of snow. 3000 w. Ry Age Gaz—Feb. 16, 1912. No. 30459.

Actual Economy in Railway Maintenance. R. P. Black. Gives suggestions from practice found to be economical in the maintenance of turnouts over which the traffic is chiefly heavy tonnage freight trains. 1500 w. Ry Age Gaz—May 17, 1912. No. 32928.

Efficiency in Track Maintenance. C. E. Lindsay. Discusses Methods of accounting. 1800 w. Ry Age Gaz—May 17, 1912. No. 32924.

The Organization of the Extra Gang. Contributions received in a prize contest, discussing methods of successfully handling heavy maintenance work, with editorial note. 6000 w. Ry Age Gaz—May 17, 1912. No. 32922.

See also same heading, under *Motive Power and Equipment.*

Narrow Gauge

Rolling-Stock on the Principal Irish Narrow-Gauge Railways. R. M. Livesey. Remarks on the advantages and disadvantages of narrow-gauge railways, and on the rolling-stock of such lines, giving illustrated descriptions of types. 5000 w. Inst of Mech Engrs—July, 1912. No. 35202 N.

See also Austria, under *Miscellany.*

Oil Storage

The Santa Fé Oil Storage Plant. J. F. Whiteford. Illustrates and describes interesting features of an oil storage system, having a capacity of 125,000 gallons of oil. 1100 w. Am Mach—Oct. 24, 1912. No. 36952.

Plateways

Rail Plateways. G. Noble Fell. Discusses their possibilities as a means of collecting and distributing traffic, and considers details of construction and types studied. Ills. 3000 w. Soc of Engrs—July, 1912. No. 35339 N.

Pumping Stations

A Reinforced Concrete Infiltration Well and Pumping Plant. Frederick N. Hatch. Brief illustrated description of the design, equipment, and construction of a pumping station at Silver Grove, Ky., for the C. & O Ry. 2000 w. Pro Am Soc of Civ Engrs—April, 1912. No. 32379 F.

Rail Anchors

The Use of Rail Anchors. Discusses the causes and results of rail creeping, the use of anti creepers, and the requirements of successful rail anchors. Ills. 3000 w. Ry Gaz, Lond—July 26, 1912. No. 35150 A.

Rail Corrosion

See Corrosion, under ELECTRICAL ENGINEERING, *Eectro-Chemistry.*

Rail Joints

The Problem of the Rail-Joint. A. Baum. Calls attention to defects, and states the chief conditions which a rail-joint should satisfy. Ills 5000 w. Bul Int Ry Cong—Aug., 1912. No. 35335 G.

Note About Rail-Joints. R. Godfernaux. Discusses the action of the joints, improvements, rail-joint systems, etc. Ills. 7000 w. Bul Int Ry Cong—Dec., 1911. No. 30008 G.

See also Welding, under MECHANICAL ENGINEERING, *Machine Works and Foundries.*

Rails

Limit of Endurance of Steel Rails Reached? Report submitted by James E. Howard to the Interstate Commerce Commission. Ills. 6500 w. Ir Trd Rev—Feb. 8, 1912. No. 30335.

Discussion on Rail Failures. Extracts from a thesis by C. J. Fox. 3000 w. Cornell Civ Engr—Nov., 1911. No. 28332 C.

The Wear of Rails of Different Grades of Steel. Information from recent investigations relating to the camparative wear of special and alloy rails. 2000 w. Eng News—Nov. 2, 1911. No. 27654.

New Method of Testing Rails. Abstract translation of articles by C. Fremont in *La Génie Civil*, describing in detail experiments made in France to ascertain types of steel which are liable to produce rail breakages. Ills. 1500 w. Engr, Lond—Nov. 10, 1911. No. 28134 A.

Mathematical Relations Between Increases in Cost and Increases in Durability in Steel Rails. B. E. V. Luty. Gives a comparison of the values of different rails under different conditions of traffic, discussing questions of economy. 1500 w. Ry Age Gaz—Dec. 15, 1911. No. 29011.

Steel Rail Controversy Rapidly Reaches Crisis. An account of the meeting of makers and users in New York. 2000 w. Ir Trd Rev—Feb. 22, 1912. No. 30708.

The Question of the Improvement of Rail Design and Specifications. W. C. Cushing. Presented at the Indiana R. R. Com.'s hearing on the rail question. Discusses requirements, properties, and manufacture. 5000 w. Ry Age Gaz—March 1, 1912. No. 30958.

The Problem of the Railway Rail. Robert G. Skerrett. Remarks on conditions found in the rail which caused the wreck on the Lehigh Valley R. R. in Aug., 1911, and discusses the question of sound steel. Ills. 1800 w. Sci Am Sup—March 2, 1912. No. 30929.

A New Specification for Steel Rails. Gives the report of the Committee of the Am. Ry. Engng. Assn. and the proposed specifications. 5000 w. Ir Age—March 28, 1912. No. 31596 C.

The Development and Use of Rails. P. H. Dudley. Abstracts of two papers read at the Indiana Railway Commission's hearing on this question. 4000 w. Ry Age Gaz—April 26, 1912. No. 32375.

Rail Failures Due to Eccentric Loading. C. A. Morse. Considers that stresses resulting from the use of the present sections under coned wheels exceed the elastic limit of the metal. Ills. 1000 w. Ry Age Gaz—April 19, 1912. No. 32217.

Rails Broken by Flat Wheels. Editorial discussion, referring to article by C. H. Benjamin and to the discussion. 1500 w. Ry Age Gaz—May 10, 1912. No. 32692.

Steel Rail Fractures. H. Hyatt. Traces the evolution of the rail from its beginning and explains some of the rail problems, the causes to which rail failures have been attributed, etc. 5000 w. Ap Sci—June, 1912. Serial. 1st part. No. 34829 C.

Features of the American Rail Situation. J. P. Snow. Read before the Int. Cong. for Test. Mat. Discusses rail steel manufacturing problems and how they are being overcome. 2500 w. Ir Trd Rev—Sept. 5, 1912. No. 35766.

How to Insure Soundness in Steel Rails. Robert W. Hunt. Read before the Int. Cong. for Test. Mat. Recommends the arbitrary rejection of the upper part of ingots for rails until sound ingots are commercially made. Ills. 2200 w. Ir Trd Rev—Sept. 5, 1912. No. 35767.

Titanium in Rail Steel. Summation of a report by Max H. Wickhorst giving results of an investigation. 1500 w. Ir Age—Sept. 26, 1912. No. 36282 C.

Comparison of Chemical Constituents of Steel Rails from 1870 to Date. Paul M. La Bach. Gives tabulated data with reference to the chemical contents of rails rolled up to the present time, with conclusions. 1200 w. Ry Age Gaz—Oct. 11, 1912. No. 36771

Types of Defective Rails and Some Methods Used in Detecting Them. Robert Job. Read before the Int. Soc for Test. Mat. Illustrated discussion of types of failures and of methods devised for detecting defects. 2200 w. Eng News—Oct. 17, 1912. No. 36893.

The Rail Situation in the United States. Reviews testimony given in the Congressional investigation of the United States Steel Corporation, explaining the situation and analyzing the conditions. Ills. 4000 w. Engr, Lond—Oct. 11, 1912. No. 36942 A.

An Analysis of Rail Failures from a Year's Statistics. Information from a report of the committee of the Am. Ry. Engng. Assn. from a study of rail failure statistics for the year ending Oct. 31, 1910. 2000 w. Eng Rec—March 28, 1912. No. 31480.

Congress of the International Association for Testing Materials. Brief account of the opening of the sixth triennial congress, and papers on steel rails by Dr. P. H. Dudley, J. P. Snow, M. H. Wickhorst, Robert W. Hunt, and James E. Howard. Ills. 11500 w. Ry & Engng Rev—Sept. 7, 1912. No. 35857.

The Broken Lehigh Valley Rail. Abstract of the report issued by the Interstate Commerce Commission on the accident at Manchester, N. J., Aug. 25, 1911, caused by a broken rail. Also editorial. Ills. 6000 w. Ry Age Gaz—Feb. 16, 1912. No. 30455.

Study of a Broken Rail on the New Haven. Illustrated description of the rail structure and conditions. 1200 w. Ry Age Gaz—May 3, 1912. No. 32576.

The Broken Rail in a Great Northern Wreck. From the report of James E. Howard to the Interstate Commerce Commission. Failure due to laminated seams and a split head. Ills. 4500 w. Ir Age —July 11, 1912. No. 34356 C.

Rail-Wear and Corrosion in the Simplon Tunnel. Notes abstracted from an article by A. Dänzer-Ischer in the *Schweizerische Bauzeitung*, giving results of investigations of the cause of heavy wear. 1500 w. Eng News—July 11, 1912. No. 34406.

The Bond between Rail and Fish-Plate (Het een en ander over het verband tusschen het spoorstaafprofiel en de laschverbinding). E. C. W. van Dijk. Discussion on the unequal support between the rail profile and splice-bars. Ills. 5000 w. De Ingenieur—Feb. 24, 1912. No. 31382 D.

Reconstruction

Four-Tracking at Two Tunnels While Maintaining Heavy Traffic. Illustrates and describes improvements in progress on the N. Y. C. & H. R. R. R. 2000 w. Eng Rec—Oct. 5, 1912. No 36550

Roadway

Report of Committee on Roadway (1) Report on formulae for determining waterway areas; (2) unit pressures allowable on roadbeds of different materials; (3) tunnel construction and ventilation; (4) agricultural drainage as it affects railways. 3500 w. Bul Am Ry Engng Assn—Dec., 1911. No. 31283 N.

Roundhouses

Engine House Equipment and Facilities. Ernest Cordeal. Suggestions as to some of the more important tools and appliances, and of the principles which should govern their selection. 4500 w. Am Engr—Sept., 1912. No. 35852 C.

Constructing a Concrete Roundhouse by Chuting from a Movable Steel Tower. Illustrated description of the work of construction. 1500 w. Engng & Con—Aug. 21, 1912. No. 35392.

Standard Gauge

The Australian Railway-Gauge Problem. Editorial review of dispute over the question of standard gauge. 2500 w. Engng—April 5, 1912. No. 31998 A.

Station Lighting

Saving Effected by the Electric Lighting of Small Stations. Mr. Sussman. From *Zeit. des Ver. deut. Eisenbahnverwaltungen.* Considers principles to be observed in securing economy, 2500 w. Bul Int Ry Cong—March, 1912. No. 31556 G.

Stations

The Best and Most Economical Methods of Handling a Station. E. H. Campbell. Read at meeting of the Chicago Great Western Station Agents' Assn. Explains the value of system, considering some details. 4500 w. Ry Age Gaz—May 24, 1912. No. 33071.

Large Stations. Sectional discussion. 15000 w. Bul Int Ry Cong—Nov., 1911. No. 28742 G.

The Largest Railway Station in Europe. Illustrations with brief description of a new railway station at Leipzig, Germany. 800 w. Sci Am Sup—Aug. 3, 1912. No. 35027.

The New Main Depot in Leipzig (Der neue Hauptbahnhof in Leipzig). A. Kleinlogel. Details of construction of this reinforced concrete station. Ills. Serial. 1st part. 1700 w. Beton u Eisen—Feb. 26, 1912. No. 31355 E.

New Railway Station at Mülheim, Prussian State Railways. Illustrated description. 700 w. Ry Gaz, Lond—Sept. 27, 1912. No. 36721 A.

The Large Hall at the Lausanne Station (La grande Halle de la gare de Lausanne). Aug. Marguerat. Illustrated description of this new covered station. Serial. 1st Part. 900 w. Bull Tech d l Suisse Romande—Sept. 10, 1912. No. 36671 D.

Stations as Consumers of Electrical Work (Bahnhöfe als Verbraucher elektrischer Arbeit). Nordmann. Details the costs of lighting, etc., in railway stations. 3500 w. Elek Kraft u Bahnen—Dec. 4, 1911. No. 29733 D.

New Northern Central Station at Baltimore. Illustrated description. 400 w. Ry Age Gaz—April 26, 1912. No. 32378.

Memphis Union Station. Illustrated description. 1500 w. Ry Age Gaz—April 12, 1912. No. 31946.

Northern Pacific Ry. Station, Tacoma. Illustrated description of a large and beautiful station on the Pacific coast. 1200 w. Eng News—July 18, 1912. No. 34646.

Plans for New Chicago Union Station. Information concerning the location and plans for this new terminal. 1700 w. Ry Age Gaz—Aug. 23, 1912. No. 35409.

Waterloo Station Rebuilding. Many illustrations with descriptions of work in progress at the London terminus of the London & South-Western Ry. 2000 w. Ry Gaz, Lond—Sept. 27, 1912. No. 36720 A.

Station Reconstruction on the London, Brighton and South Coast Railway. Drawings and brief descriptions of some of the new stations. 1000 w. Ry Gaz, Lond—Sept. 27, 1912. No. 36722 A.

The New Railway Station, Pretoria. Illustrated description of a new station in South Africa. 1500 w. Ry Gaz, Lond—Oct. 4, 1912. No. 36835 A.

Super-Elevation

See Accelerometer, under CIVIL ENGINEERING. *Measurement.*

Switches

Novelties in Switch Design. Mr. Schmitt. Illustrates and describes the spring tongue switches. 2700 w. Bul Int Ry Cong—Jan., 1912. No. 30130 G.

Simplified Electric Interlocking Systems (Das vereinfachte elektrische Stellwerk). Herr Niemann. Description of electrically operated switching systems for terminals, etc., by means of which complicated systems are avoided. Ills. 6000 w. Zeitschr des Ver deutscher Ing—Feb. 17, 1912. No. 31360 D.

Terminals

The New York Central's Interest Free Terminal. Editorial on the plans to make the space above the terminal tracks pay the entire interest charges on the cost of building the terminal yards and station. 1000 w. Ry Age Gaz—March 15, 1912. No. 31207.

Erecting the Grand Central Terminal. Brief description of framework construction while old structure was removed, rock excavated, and constant train service maintained on the site, far below grade. Ills. 2500 w. Eng Rec—Aug. 24, 1912. No. 35428.

Extensions of the Pennsylvania Railroad in Greater New York (Die Erweiterung der Bahnanlagen der Pennsylvania-Eisenbahn in Gross-New York). Herr Lamp. Descriptions of the Hudson and Long Island City Tunnels, the 33rd St. Station, and the yards at Sunnyside. Ills., plates and maps. Serial. 1st part. 5500

w. Glasers Ann—Aug. 1, 1912. No. 36142 D.

Erecting Street Platforms for the Pennsylvania Terminal, New York. Illustrated description of these street bridges, their erection, and the amount of materials used. 3000 w. Eng Rec—Nov. 18, 1911. No. 28096.

The New South Brooklyn Freight Terminal, New York Harbor. Charles W. Staniford and Philip Guise. Illustrated description, showing how some of the requirements of the harbor have been provided for. 7000 w. Eng News—March 7, 1912. No. 31078.

Locomotive Terminals on the Chicago & Northwestern Ry. Illustrated detailed descriptions of a series of new terminals at various points. 4000 w. Ry & Engng Rev—June 15, 1912. No. 33756.

Electrical and Mechanical Equipment. S. G. Neiler. Illustrated detailed description of the equipment for the C. & N-W. Ry. terminal at Chicago. 7 plates. 21500 w. Jour W Soc of Engrs—Dec., 1911. No. 29989 D.

The New Passenger Terminal of the Chicago and North Western Railway. W. C. Armstrong. An illustrated detailed account of the terminal improvement in Chicago. General discussion. 14 plates. 29500 w. Jour W Soc of Engrs—Dec., 1911. No. 29937 D.

Winter Work on Terminals. F. E. Crabbs. Gives experience at the C. & N. W. terminal in Chicago. 1200 w. Ry Age Gaz—Feb. 16, 1912. No. 30461.

Proviso Terminal, C. & N. W. Ry. Illustrated description of a new terminal temporarily erected near Chicago. 1500 w. Ry Engng & Main of Way—Oct., 1912. No. 36854.

The Terminal Situations at St. Louis and Chicago. Editorial on the present conditions. 1500 w. Ry Age Gaz—Sept. 6, 1912. No. 35802.

New Seattle Terminals; Oregon-Washington Railroad & Navigation Company. Illustrated detailed description of the work. 2000 w. Ry Age Gaz—Jan. 19, 1912. No. 29858.

Improving Railway Terminals at Seattle. H. Cole Estep. Map, plans, and discussion of the report submitted by the Municipal Plans Commission for the arrangement of the city with a view to city expansion. 2500 w. Ry Age Gaz—Nov. 24, 1911. No. 28263.

New Railway Terminals, Seattle, Wash. Illustrates and describes recent improvements at Seattle and other Pacific cities. 2500 w. Eng News—Aug. 8, 1912. No. 35099.

Canadian Pacific Passenger Terminal at Vancouver. Plans and description of improvements in progress. 1000 w. Ry Age Gaz—July 5, 1912. No. 34259.

Rail and Water Terminals at Texas City. Harvey A. Thomas. Illustrates and describes improvements near Galveston, including new piers, warehouses, and grain elevator equipped with modern facilities. 1500 w. Ry Age Gaz—July 12, 1912. No. 34422.

New Railway Transshipment Terminal. H. McL. Harding. Plan and description of the arrangements and cargo-handling methods at Montgomery Terminal in New Jersey. 4000 w. Eng Rec—Sept. 7, 1912. No. 35806.

Watervliet Terminal, Delaware & Hudson Co. J. C. Chapple. Illustrated detailed description. 2500 w. Ry Mas Mech—Oct., 1912. No. 36879 C.

New Locomotive Terminal at Carbondale. Illustrated description of the D. & H.'s improved facilities for taking care of Mallet locomotives used in heavy coal movement. 600 w. Ry Age Gaz—May 17, 1912. No. 32921.

Berlin Terminus Stations and Their Traffic Capacity. Dr. Schroeder. Discusses the factors affecting traffic capacity and how it is possible to obtain better results. 5000 w. Bul Int Ry Cong—June, 1912. No. 33996 G.

Forbes Street Terminal of the Pittsburgh Railways. Illustrated description of an operating terminal where the carhouse proper and transportation offices are separate structures. 1200 w. Elec Ry Jour—Feb. 10, 1912. No. 30378.

Division Terminal Improvements, C., M. & St. P. Ry., at Aberdeen, S. Dak. Illustrated detailed description of structures and plant. 2500 w. Ry & Engng Rev—Feb. 17, 1912. No. 30486.

See also Boston, under CIVIL ENGINEERING, *Waterways and Harbors*, and Terminals, under ELECTRICAL ENGINEERING, *Power Applications*.

Ties

Report of Committee on Ties. Report on (1) size of cross-ties required for the stresses to which they are subjected; (2) tie renewals in continuous stretches versus single tie renewals; (3) metal composite and concrete ties. Ills. 17000 w. Bul Am Ry Engng Assn—Dec., 1911. No. 31281 N.

The Cost of a Treated Tie. D. Burkhalter. Discusses the results secured by the use of preservatives with relation to the expense of treatment. 2500 w. Ry Age Gaz—Aug. 16, 1912. No. 35245.

Production of Ties. A. R. Joyce. Read before the Wood Preservers' Assn. Information concerning the cutting, handling and treatment of ties, and production in general. 2500 w. Ry & Engng Rev—Jan. 20, 1912. No. 29887.

Improved Method of Treating Ties and Timbers. W. F. Goltra. Presents a new method of treating with preservatives, illustrating a suitable plant for the work. 3500 w. Ry Age Gaz—Jan. 12, 1912. No. 29555.

Grouping of Timbers in Tie Treatment. E. O. Faulkner. Editorial letter on the sorting of timber before treating, and matters relating to the treatment. Also editorial. 2500 w. Ry & Engng Rev—Nov. 4, 1911. No. 27698.

The Manufacture of Cross-Ties for Preservative Treatment. Howard F. Weiss. From an address before the Am. Wood Preservers' Assn. Discusses important points in manufacture. 2000 w. Ry Age Gaz—April 19, 1912. No. 32222.

The Corrosion of Track Fastenings in Zinc-Treated Ties. An account of investigation made of this trouble. 2000 w. Eng Rec—Aug. 3, 1912. No. 35021.

Arrangements for Piling Ties. J. H. Waterman. Abstract of address before the Wood Preservers' Assn. Illustrates and describes a proposed layout for a tie yard. 1800 w. Ry Age Gaz—Feb. 16, 1912. No. 30458.

Wooden Cross-Ties for Heavy Fast Traffic (Spoorstaafoplegging op houten dwarsliggers voor spoorwegen met zwaar en snel verkeer). E. C. W. Van Dijk. Reviews practice in the preparation and laying of ties to meet these conditions. Ills. 7800 w. De Ingenieur—Aug. 3, 1912. No. 36173 D.

The Life of Wooden and Iron Transverse Sleepers. Mr. Cauer. An account of Mr. Biedermann's investigations and some of their important results. 28000 w. Bul Int Ry Cong—Feb., 1912. (Part 2.) No. 30896 G.

Iron and Wood Ties (Die Eisen und Holzschwelle). Considers the relative qualities and durability of the two materials. 9100 w. Stahl u Eisen—Nov. 9, 1911. No. 28801 D.

The Sleeper Famine. C. O. Burge. Gives experience with metallic sleepers of the type of the cast iron pot or bowl, comparing with timber. 1500 w. Ry Gaz, Lond—Nov. 3, 1911. No. 28023 A.

Steel Ties on the Bessemer & Lake Erie. Illustrated report of results from eight years' experience, with over 850,000 now in service under heavy traffic on this road. 2500 w. Ry Age Gaz—Oct. 18, 1912. No. 36886.

Railway Ties (La Traversa delle Strade Ferrate). A discussion of the various systems of making ties of reinforced concrete. Ills. Serial. 1st part. 3000 w. Il Cemento—Nov. 30, 1911. No. 28895 D.

Recent Practice with Reinforced Concrete Ties (Neuere Erfahrungen mit Eisenbetonschwelle). Herr Bloss. Description of ties manufactured by Dyckerhoff & Widmann, and also the asbestos ties made by the firm of Rud. Wolle. Ills. 1600 w. Elek Kraft u Bahnen—Feb. 14, 1912. No. 31368 D.

New Experiments with Reinforced-Concrete Sleepers. Mr. Bloss. Information concerning two new German reinforced-concrete sleepers tested with others on the Saxon State Ry. Ills. 1600 w. Bul Int Ry Cong—Sept., 1912. No. 36275 G.

See also Timber Preservation, under CIVIL ENGINEERING, *Materials of Construction.*

Tie Handling

See Loading Machines, under MECHANICAL ENGINEERING, *Transporting and Conveying.*

Tools

New or Improved Maintenance Tools. Contributions that were entered in a prize contest for devices of advantage in maintenance work. Ills. 1500 w. Ry Age Gaz—Sept. 20, 1912. No. 36073.

Tracks

Report of Committee on Track. Report on (1) frogs, crossings and switches; (2) general specifications; (3) designs for turnouts. 3500 w. Bul Am Ry Engng Assn—Dec., 1911. No. 31282 N.

Location of Frog Points on Crandall's Transition Curves. Anders Bull. Develops a formula for simplifying the location. 1200 w. Eng News—March 7, 1912. No. 31081.

The Formation, Nature, Importance and Utility of the Osnabrücker Track Exhibition (Ueber Enstehung, Wesen, Bedeutung und Nutzbarmachung der Osnabrücker Gleissammlung). Herr Haarmann. Illustrated description of old and modern track methods, including rail designs, and ties of all the latest approved standards. 7000 w. Glaser's Ann—April 15, 1912. No. 32709 D.

The Use of Manganese in Track Work. Illustrated discussion of economies resulting from its use with reports of results secured. 3500 w. Ry Age Gaz—Aug. 16, 1912. No. 35243.

Some Roadbed and Track Standards of the B. R. & P. Ry. Illustrations and information of standard plans, designs and methods of the maintenance of way department. 3500 w. Ry & Engng Rev—Aug. 17, 1912. No. 35277.

Track Maintenance Methods on the Chicago Great Western Railroad. Abstract of an instruction pamphlet for foremen outlining standard practice in the conduct of routine track work. 5500 w. Eng Rec—Nov. 18, 1911. No. 28092.

Standard Designs in Concrete Track Structures, Baltimore and Ohio Railway. Brief illustrated description. 500 w. Engng & Con—Feb. 28, 1912. No. 30865.

See also same heading, under STREET AND ELECTRIC RAILWAYS.

Track Labor

The Negro as a Track Laborer. The second of a series of discussions of the characteristics of the various types of maintenance workmen. 3000 w. Ry Age Gaz—July 19, 1912. No. 34671.

The Italian as a Track Laborer. Third of a series of discussions of the characteristics of types of maintenance workmen. Embraces four articles by different authors. 4500 w. Ry Age Gaz—Aug. 16, 1912. No. 35244.

The Pole and Slav as Track Laborers. Fifth of a series of discussions of the characteristics of the various types of maintenance workmen and their relative usefulness. 2500 w. Ry Age Gaz—Oct. 18, 1912. No. 36887.

Track Reconstruction

Closing the Breaches on the Line from Tours to Nantes Produced by the Latest Flood of the Loire (De la Fermeture des Brèches Produites sur la Ligne de Tours a Nantes par la dernière Crue de la Loire). M. G. Liébeaux. Description of flood and work of reconstruction. Ills. and Plates. 11000 w. Rev Gen des Chemins de Fer—Jan., 1912. No. 30598 G.

Track Scales

Track Scale on the Baltimore and Ohio. L. D. Davis. Illustrates and describes the design adopted and the method of installation. 1500 w. Ry Age Gaz—Feb. 16, 1912. No. 30454.

Track Shims

Shims. E. R. Lewis. On the importance of good shims and good braces and their intelligent use in railway maintenance. Ills. 2500 w. Ry Age Gaz—March 15, 1912. No. 31215.

Track Spikes

Tests of Holding Power of Track Spikes and Indentation by Tie Plates in Various Kinds of Timber. From a report on a series of tests carried out in the physical laboratory of the Armour Inst. of Tech. 1200 w. Engng & Con—July 24, 1912. No. 34777.

Trestles

Filling the Sprague Gulch Trestle on the Spokane, Portland & Seattle. An illustrated account of an unusually large and interesting undertaking in bridge filling. 2000 w. Ry Age Gaz—Dec. 15, 1911. No. 29010.

Tunnels

New Kingswood Tunnel, B. & O. R. R. Illustrated description of the construction of a new double-track tunnel in W. Va. 2500 w. Eng News—Feb. 22, 1912. No. 30723.

Driving the New Kingswood Railroad Tunnel at the Allegheny Summit. E. M. Graham. Illustrated account of a double-track bore on the B. & O. which advanced 4,211 feet in 13 months. 3000 w. Eng Rec—Feb. 10, 1912. No. 30344.

New Tunnel to Improve Baltimore & Ohio Mountain Operation. Shows the old and new tunnel locations and gives illustrated description of the construction. 2000 w. Eng Rec—Dec. 9, 1911. No. 28702.

Driving the Big Savage Railroad Tunnel with Compressed Air. Describes methods used when an inrush of soft material prevented progress by customary methods. 2500 w. Eng Rec—Dec. 23, 1911. No. 29137.

Building a Double-Track System Around a Single-Track Railroad Tunnel. Illustrated description of work on the L. & N. R. R. near Covington, Ky., without interruption of traffic. 1500 w. Eng Rec—Jan. 13, 1912. No. 29592.

See also same heading, under CIVIL ENGINEERING, *Construction*.

Turnouts

The Turnout. F. S. Stevens. From Bul. No. 139 of the Am. Ry. Engng. Assn. Considers features of merit and advantages to be gained by their adoption. 2500 w. Ry Age Gaz—Dec. 15, 1911. No. 29014.

Turntables

Design of Turntables for Heavy Locomotives. Information of the general principles underlying present practice from a report to the American Ry. Bridge & Bldg. Assn. 2500 w. Eng Rec—Oct. 26, 1912. No. 37003.

Washouts

Repairing Washouts on a French Railway. Plans and descriptions from an article by Mr. Liebeaux, in *Rev. Gen. des*

Chem. de Fer. 2500 w. Eng News—Aug. 1, 1912. No. 35039.

Water Tanks

The Merits and Demerits of Reinforced Concrete Tanks for Railway Water Service. From the Committee report on Water Service of the Am. Ry. Engng. Assn. Ills. 3000 w. Engng & Con—April 24, 1912. No. 32329.

A Reinforced Concrete Railroad Water Tank 187 Feet High. Drawings and description of a structure at Savannah, Ga., built by the Central of Georgia Ry. 1200 w. Engng & Con—Jan. 3, 1912. No. 29382.

Widening

The Euston and Watford Widening. Illustrated description of important work on the London & Northwestern in England. 1500 w. Ry Gaz, Lond—June 14, 1912. No. 33924 A.

The Euston to Watford Widening. Map and illustrated description of work on the London & Northwestern Railway. 3500 w. Engr, Lond—June 14, 1912. No. 33942 A.

Yards

The Economic Organization and Maintenance of the Freight Car Repair Yard at a Terminal Point. J. Thomas Warde. Read before the W. Can. Ry. Club. Suggestions for the location and equipment of such yards. 1600 w. Can Engr—Jan. 25, 1912. No. 30106.

Yard and Shop Improvements at Boone, Iowa. H. Rettinghouse. Illustrated description of a terminal and repair plant of medium size, representing C. & N. W. practice. 4000 w. Ry Age Gaz—July 26, 1912. No. 34824.

Illinois Central's New Centralia Yards. Shelby S. Roberts. Illustrated article describing operating conditions governing the details of the hump yard and other facilities. 4000 w. Ry Age Gaz—Aug. 9, 1912. No. 35100.

Yards and Terminal of the Philadelphia and Reading Ry. Co. at St. Clair, Pa. P. S. Lewis. Illustrates and describes an important extension of facilities for handling coal traffic. 3500 w. Ry Mas Mech—Sept., 1912. No. 36078 C.

Electro-Pneumatic Switch Operation at Pitcairn Yard, P. R. R. Illustrates the track layout and describes the method of classifying and dispatching trains. Ills. 2000 w. Ry & Engng Rev—Oct. 5, 1912. No. 36598.

TRAFFIC

Automobile Competition

The Effect of the Automobile on Railway Traffic. Editorial discussion of the inroads on passenger business and on freight and express transportation. 1500 w. Ry Age Gaz—Oct. 18, 1912. No. 36881.

Car Efficiency

How to Secure Maximum Use of Freight Cars. J. M. Daly. Abstract of a Committee report rendered at the meeting of the Operating Officers of the Illinois Central, and Yazoo and Mississippi Valley, at Chicago. 2800 w. Ry Age Gaz—Oct. 11, 1912. No. 36772.

Car-Transfer

The 69th St. Car-Transfer Bridge of the New York Central & Hudson River R. R. at New York City. Illustrations and description of a bridge having novel features to accommodate a tidal range of about 11 ft. 3500 w. Eng News—Dec. 28, 1911. No. 29174.

Combination

The South American Railway Combine. Map and brief account of the combination of the Entre Rios, Argentine North-Eastern and Paraguay Central Railways. 900 w. Ry Gaz, Lond—Aug. 23, 1912. No. 35747 A.

Earnings

The Trend of Railway Earnings. Frank Haigh Dixon. A comparison of earnings and expenses. 1500 w. Ry Age Gaz—Dec. 29, 1911. No. 29269.

France

Review of Traffic Questions. C. Colson. Reviews the results of working the railways of the French State from 1909 to 1911. 7300 w. Bul Int Ry Cong—May, 1912. No. 33685 G.

Freight

Freight Classification on American Railways. William Z. Ripley. This first article of a series considers the complexity of classifications now in use, their history, and the associations which formulate them. 5500 w. Ry Age Gaz—Aug. 16, 1912. Serial. 1st part. No. 35240.

Rotterdam's Import Railway Freight (Het spoorweggoederenvervoer te Rotterdam). W. F. H. van Rijckervorsel. Statistics on the amount and character of goods handled by the railways. Diagrams. 4500 w. De Ingenieur—Mar. 9, 1912. No. 32072 D.

Improvements in the Freight Traffic on the Government Railways (Die Verbesserung des Güterverkehrs auf den k. k. Staatsbahnen). Rudolph Heine. Reviews former and present conditions in Germany. 3000 w. Zeit d Oest Ing u Arch Ver—May 17, 1912. No. 33565 D.

Freight Agents

The Local Freight Agent—His Duties and Responsibilities. R. O. Wells. Paper and general discussion. 14500 w. Pro St Louis Ry Club—May 10, 1912. No. 33644.

Freight Handling

Electrically Operated Freight Handling Truck. Illustrated description of a motor truck for freight handling at stations, driven by a storage battery. 1000 w. Ry Age Gaz—Oct. 11, 1912. No. 36773.

Handling Freight with Motor Trucks at the Erie Terminal in Jersey City. Illustrates and describes the use of low-body storage battery trucks. 2000 w. Eng Rec—Jan. 6, 1912. No. 29407.

New Freight Transfer Station Operating with Electric Trucks. Illustrated description of the D., L. & W. R. R. station at Secaucus, N. J. 1500 w. Eng Rec—Sept. 21, 1912. No. 36061.

The Buckwalter Electric Baggage Truck. Illustrated description of a form of truck in use at many of the large terminals, with information concerning its operation and economies resulting 1000 w. Ry Age Gaz—Sept. 27, 1912. No. 36391.

Handling the Traffic at the Delhi Durbar. Lewis R. Freeman. An account of the successful methods of handling the enormous traffic. 2500 w. Ry Age Gaz—April 19, 1912. No. 32219.

Freight Loss

Frisco Freight Loss and Damage Bureau. An account of the work of the new freight loss and damage department, put in operation Sept. 15, 1911. 5000 w. Ry Age Gaz—July 26, 1912. No. 34825.

Freight Rates

Recent Efforts to Advance Freight Rates. M. B. Hammond. Discussion based on evidence taken by the Interstate Commerce Commission. 8500 w. Bul Am Ec Assn—Dec., 1911. No. 29090 F.

Different Classes of Competition Resulting in the Making of Railroad Freight Rates. T. C. Powell. Explains features that make up the rates of freight, showing the difficulties in the adjustment. 4000 w. Pro St. Louis Ry Club—Jan. 12, 1912. No. 30498.

Freight Rates on the Prussian Railway (Der Massengüterverkehr auf der Preüssischen Staatsbahn). Heinr. Macco. Review of freight conditions. 3200 w. Stahl u Eisen—March 7, 1912. No. 31338 D.

Interchange

Freight Interchange at Chicago. Outlines the present facilities and methods and describes two plans proposed to effect savings in time and cost. Map. 3500 w. Eng News—May 9, 1912. No. 32691.

Joint Car Interchange Bureau at Chicago. An account of a plan designed to facilitate the interchange and reporting the interchange and reporting of cars at large terminals. 3000 w. Ry Age Gaz—Feb. 9, 1912. No. 30361.

Perishable Goods

On the Question of Perishable Goods. J. M. Culp. Addenda to Report No. 1 for countries using the English language. Ills. 7700 w. Bul Int Ry Cong—May, 1912. No. 33683 G.

Sectional Discussion on Perishable Goods at Meeting Held July 11, 1910. 11800 w. Bul Int Ry Cong—May, 1912. No. 33682 G.

Private Railways

Decision in Tap Line Cases. Decision of the Interstate Commerce Commission indicating rules for determining what lumber roads should be considered as being plant facilities. 5500 w. Ry Age Gaz—May 3, 1912. No. 32573.

Railway Bill

The Railway Bill. A discussion of Bill No. 124, affecting British railway rates. 3000 w. Engr, Lond—April 12, 1912. Serial. 1st part. No. 32283 A.

Rates

A Living Rate for the Railways. Morrell W. Gaines. Reprinted from an article in the *Yale Review*. Reviews construction and railway growth of railways in the United States, and the effect of Interstate Commerce regulation. 5000 w. Ry Age Gaz—Jan. 5, 1912. No. 29402.

Reasonable Regulation of Railway Rates. Morrell W. Gates. Abstract from *Yale Rev.* Discusses the building up of commerce by rate-making on business principles. 5000 w. Ry Age Gaz—June 28, 1912. No. 34124.

The Interstate Commerce Commission's Decision in the Express Company Cases. (Condensed.) Radical changes in methods and rates. 2500 w. Ry Age Gaz—July 19, 1912. No. 34668.

The Express Rate Cases. Editorial on the opinion rendered by the Interstate Commerce Commission. 1500 w. Ry Age Gaz—July 26, 1912. No. 34823.

An Interesting Rate Decision by the Canadian Railway Commission. The decision relating to the case of the Dawson Board of Trade versus the White Pass & Yukon Route, rescinding an order of Jan. 18, 1911, which reduced freight and passenger rates. 2000 w. Ry Age Gaz—April 12, 1912. No. 31943.

The Tap Line Case Supplemental Report. Gives two cases cited and the commission's general remarks. 3500 w. Ry Age Gaz—June 7, 1912. No. 33498.

The Crosby Bill on Rate Regulation. Suggests a method of valuation of properties of public service carriers and outlines a suggested scale for a rate of return for new and old capital. 4000 w. Elec Ry Jour—July 20, 1912. No. 34692.

Tables for Finding Proper Tonnage Rating. Paul M. La Bach. Gives acceleration and retardation figures explaining their use in solving problems of railway location and train loading. 3000 w. Ry Age Gaz—Aug. 23, 1912. No. 35407.

Shortage

Is There Really a Car Shortage? N. D. Ballantine. Better co-operation from shippers and greater efficiency from use of motive power would greatly improve conditions. 2500 w. Ry Age Gaz—Oct. 25, 1912. No. 36998.

The Danger of Shortage of Railway Facilities. Abstract of a bulletin of the Railway Business Assn. States facts obtained by a recent inquiry into the railway situation. 3500 w. Ry Age Gaz—March 1, 1912. No. 30960.

Tonnage Rating

The Effect of Cold Weather Upon Tonnage Rating. Edward C. Schmidt. Presents results of investigations to determine the increase in train resistance and discusses current practice of American railroads in reducing tonnage ratings during cold weather. Discussion. 8500 w. Pro Cent Ry Club—Jan. 11, 1912. No. 30497 C.

Train Service

A Co-operative System as Applied to Train Service. Discusses the payment of train service on a ton mileage basis plus a fixed stipend for train mileage. 1500 w. Ry Age Gaz—Nov. 10, 1911. No. 27784.

The Santa Fe Train de Luxe. Illustrates and describes features of a special service train, once a week, between Chicago and Los Angeles. 800 w. Ry Age Gaz—Dec. 15, 1911. No. 29007.

Wages

See same heading, under INDUSTRIAL ECONOMY.

Waterways Competition

Railways and Waterways. Sectional Discussion. The investigation of the influence of waterways, considered as feeders and as competitors, on railways. 14200 w. Bul Int Ry Cong—Feb., 1912. (Part 2.) No. 30891 G.

Waybills

The Manibill. From an account by D. C. Boy of his experiences with individual way-bills on the Central of Georgia. 1500 w. Ry Age Gaz—Oct. 18, 1912. No. 36884.

MISCELLANY

Associations

Traveling Engineers' Association. Abstracts of addresses, papers and discussions at the 20th convention. Ills. 17000 w. Ry Age Gaz—Sept. 6, 1912. No. 35803.

Australia

Australian Railways. J. G. Jenkins. A detailed review of the conditions, the railways, their administration, etc. General discussion. 2500 w. Jour Soc of Arts—June 7, 1912. No. 33763 A.

Austria

Austrian Local and Narrow Gage Roads (Oesterreische Lokal- und Kleinbahnen). Herr Liebmann. Reviews the present conditions of the roads, methods of construction, yards, terminals, etc. Ills. Serial. 1st part. 5000 w. Glasers Ann—July 1, 1912. No. 35564 D.

Brazil

The Railways of Brazil (Les Chemins de Fer du Brésil). L. Wiener. A review of the political and geographical conditions in Brazil, with reference to its railways. Ills. Serial. 1st part. 15400 w. Rev Gen des Chemins de Fer—Nov., 1911. No. 28852 G.

The Railways of Brazil (Les Chemins de Fer du Brésil). A. Le Vergnier. Brief review of the several systems in Brazil, and their sources of revenue. Map. 4800 w. Génie Civil—May 18, 1912. No. 32788 D.

British Railways

Mr. Sam Fay on the Future of British Railways. Extracts from presidential address to the Ry. Students' Union. 3500

w. Ry Gaz, Lond—Nov. 3, 1911. No. 28024 A.

The Railway Situation. Editorial review of the past half year. 3000 w. Engng—Feb. 23, 1912. No. 31037 A.

Canada

Canadian Railways in 1911. J. L. Payne. A report of progress during the year ending June 30, 1911. 2500 w. Ry Age Gaz—Feb. 9, 1912. No. 30363.

A Short Sketch of the Development of Transportation Facilities in Canada. Collingwood Schreiber. A general review of the development of railways and waterways. 4000 w. Can Soc of Civ Engrs—Dec. 14, 1912. No. 31294 N.

Car Records

A Terminal Car Record. W. E. Beecham. Describes records used by the C., M. & St. P. R. R. Discussion. 12500 w. Pro St. Louis Ry Club—Oct. 13, 1911. No. 28317.

Colombia

History of the Cauca Railway (Historia del ferrocarril del Cauca) Alfredo Ortego. Reviews initial organization and construction from period of inception in 1855. Serial. 1st part. 3600 w. Ann de Ingenieria—Sept.-Oct., 1912. No. 36661 N.

Development

Development of the Railroads of North America and of Their Control by the State. James Douglas. Historical review with discussion of related topics. 10500 w. Stevens Ind—Oct., 1911. No. 30001 D.

How Railroads Aid Industrial Development. Francis Washburn Hoadley. Reviews the work of the Delaware & Hudson Company. Ills. 2500 w. Cassier's Mag—Feb., 1912. No. 30289 B.

Possibilities of Railroad Expansion in the Southwest. B. F. Yoakum. Discusses the future outlook and development in connection with the opening of Panama Canal. 2500 w. Mfrs' Rec—Feb. 22, 1912. (Special.) No. 30752 D.

Economics

Economies Effected by Mallet Locomotives on the New York Central & Hudson River R. R. A report of tests made under expert direction and statement of conclusions. Ills. 2500 w. Ry Gaz, Lond—Dec. 22, 1911. No. 29459 A.

Opportunities for Economy on Railways. L. C. Fritch. This fourth article of a series discusses how to reduce the number of personal injuries and the amount of loss and damage. 4000 w. Ry Age Gaz—April 12, 1912. No. 31945.

Eritrea

Data on the Eritrean Railway (Alcuni dati intorno all' esercizio della Ferrovia dell Éritrea). G. Puccini. Discussion of the traffic of the railway. Serial. 1st part. 3300 w. Ingeg Ferroviaria—Oct. 16, 1911. No. 28482 E.

The Eritrean Railway. Massaua-Asmara-Agordat (La Ferrovia Eritrea Massaua-Asmara-Agordat). Details of the construction and equipment of the lines Massaua to Asmara and Asmara via Cheren to Agordat in Africa. Ills. 6500 w. Ingeg Ferro—March 15, 1912. No. 32313 E.

Filing System

Classification for Railway Files. S. E. Wallace. Outline and suggestion for simplifying the problem of filing papers and information for ready reference. 3000 w. Ry Age Gaz—Oct. 18, 1912. No. 36882.

Finance

Railway Capitalization and Traffic. H. T. Newcomb. An examination of official data, and a study of conditions affecting the development of American railways. 3000 w. Ry Age Gaz—Sept. 13, 1912. No. 35948.

Railway Bonds and Notes. William Z. Ripley. Discusses American practice of financing railways. 4500 w. Ry Age Gaz—Jan. 5, 1912. No. 29405.

Collateral Trust Bonds. William Z. Ripley. Explains the character of these bonds and their use as securities. 2500 w. Ry Age Gaz—Jan. 12, 1912. No. 29551.

Convertible Railway Bonds. William Z. Ripley. An explanation of the advantages and disadvantages of securities of this character. 3000 w. Ry Age Gaz—Jan. 19, 1912. No. 29848.

Foreign Capital in American Railways. William Z. Ripley. Discusses the distribution of ownership of railway securities, reviewing some of the past and present conditions. 2200 w. Ry Age Gaz—Nov. 3, 1911. No. 27689.

Foreman

The Problem of the Section Foreman. Contributions received in a prize contest, discussing methods of providing a satisfactory and sufficient supply. Also editorial. 9000 w. Ry Age Gaz—April 19, 1912. No. 32220.

Foremen's Association

Railway General Foremen's Association. Report of the Chicago convention, giving W. L. Park's address on the labor situation, and details of papers. 6800 w. Ry Age Gaz—Aug. 2, 1912. No. 35052.

Forest Fires

See Timber, under CIVIL ENGINEERING, *Materials of Construction.*

Formosa

Imperial Taiwan Railways. Illustrated historical review of these railway lines on the island of Formosa. 1500 w. Far East Rev—Sept., 1911. No. 28008 N.

France

The State Railways of France. Editorial review of the State railway system, its beginnings, results, and condition of working. 5000 w. Engng—April 12, 1912. No. 32277 A.

Results Obtained in 1911 on the Systems of the Five Principal Railways in France (Résultats Obtenus en 1911 sur les Réseaux des cinq Compagnies principales des Chemins de Fer francais). A series of statistical tables. 14 pages. Rev Gen des Chemins de Fer—August, 1912. No. 35577 G.

Germany

Reforms in the Administration of the German State Railways. Mr. Völcker. Considers in detail reforms in the Prussian and Bavarian administrations and their advantages. 7300 w. Bul Int Ry Cong—Aug., 1912. No. 35336 G.

Reforms in the Administration of the German State Railways. Summary of a paper read by Mr. Völcker before the Austrian Economists Soc. Reviews the different forms of administration adopted at various times. 2500 w. Ry Gaz, Lond—Oct. 4, 1912. No. 36836 A.

Great Britain

British Railways: Their Accounts and Statistics. W. M. Acworth. Read before the Roy. Statistical Soc. Considers the information needed by the public, how far present information is adequate, how far the new accounts supply essential information, and the further data needed. 5000 w. Ir & Coal Trds Rev—Sept. 20, 1912. No. 36504 A.

Greece

The Railways of Greece. Percy F. Martin. Describes systems and criticizes features. 800 w. Ry Gaz, Lond—March 15, 1912. Serial. 1st part. No. 31522 A.

Railways in Greece. Discusses the opposition of the Turkish Government to the completion of European systems. 1200 w. Ry Gaz, Lond—March 1, 1912. No. 31138 A.

The Railways of Greece. Trans. from the *Archiv von Eisenbahnwesen.* Brief account of the railway development and the lines in operation. 1200 w. Ry Age Gaz—Aug. 2, 1912. No. 35053.

Holland

A Description of the Business of the Rotterdam Tramway Company, Particularly Its Steam Lines (Een praatje over het bedrijf der Rotterdamsche Tramweg-Maatschappij, meer in het bijzonder over dat harer stoomtramwegen). H. van T. Hoogerhuys, Jr. A brief description of methods and traffic. Ills. and Maps. 6500 w. De Ingenieur—Nov. 4, 1911. No. 28892 D.

Illinois Central

Illinois Central. Review of the fiscal year ending June 30, 1912. Map. 1500 w. Ry Age Gaz—Oct. 4, 1912. No. 36510.

India

Indian Railways. Neville Priestley. Deals with the practical side of the subject, especially with railway finance. Also discussion. 1200 w. Jour Soc of Arts—May 31, 1912. No. 33654 A.

Interstate Commerce

Annual Report of the Interstate Commerce Commission. Reviews chapters on accidents, safety appliances and other matters connected with operation. 2500 w. Ry Age Gaz—Jan. 5, 1912. No. 29404.

Inventions

Some Revolutionizing Inventions That Didn't Revolutionize. Editorial review of mechanical curiosities in the railway field. 1500 w. Ry & Loc Engng—Nov., 1912. No. 37239 C.

Investigations

Review of the Work of the American Railway Engineering Association. A summary of the year's investigations of the standing committees. 5000 w. Eng Rec—March 23, 1912. No. 31483.

Korea

The Imperial Chosen (Korean) Railways. Illustrated description with general information. 2500 w. Far East Rev—Oct., 1911. No. 28777 N.

Labor

Efficiency and the Railway Wage Problem. Francis Lyster Jandron. Practical proposals from an operating official. 3500 w. Engineering Magazine—Nov., 1912. No. 37116 B.

The Railway Labor Situation. Dr. Edward S. Mead. Discusses the pressure of the railway brotherhoods for higher wages and the serious problems related. 2800 w. Ry Age Gaz—Oct. 25, 1912. No. 36999.

See also Track Maintenance, under *Permanent Way and Structures.*

Legislation

Conference Committee Methods in Handling Railway Legislation on Mechanical Matters. C. A. Seley. Part of an address delivered before the engineering students of the Univ. of Illinois, Jan. 4, 1912. 3000 w. Ry Age Gaz—Jan. 19, 1912. No. 29850.

Conference Committee Methods in Handling Railway Legislation on Mechanical Matters. Charles Arthur Seley. An address delivered before the College of Engineering, Urbana, Ill. 3500 w. Bul Univ of Ill—April 29, 1912. No. 34373 N.

The Stanley Committee's Recommendations. Gives text of the amendments to the Sherman law and summary of further legislation proposed. 3500 w. Ry Age Gaz—July 26, 1912. No. 34826.

What the West Needs in Coal Land Legislation. George Otis Smith. Address before the Am Mines Cong. Discussion of public land laws and the need of opportunity for the development of coal lands. 2200 w. Min Sci Pr—Nov. 11, 1911. No. 28070.

Management

Acworth and Cook on a Government Holding Company. A discussion concerning the managing of a railway system. 3000 w. Ry Age Gaz—June 21, 1912. No. 33869.

Influence of Supply Department Management on Operating Expenses. George G. Yeomans. Shows that it can be made to play an important part. 1500 w. Ry Age Gaz—July 19, 1912. No. 34666.

The Reorganization of Railway Management (Die Reorganisation der Staatseisenbahnverwaltung). R. Heine. Presents the technical and economical aspects of the subject. 2100 w. Zeit d Oest Ing u Arch Ver—Dec. 22, 1911. No. 29754 D.

See also same heading, under INDUSTRICAL ECONOMY.

Manchuria Railway

The Development of the South Manchuria Railway Co. An illustrated historical review. 5000 w. Far East Rev—Sept., 1911. No. 28001 N.

Opportunities

Opportunity in the Railway Business. Samuel O. Dunn. Address delivered in Chicago, on the opportunities for collegemen in the service. 4000 w. Ry Age Gaz—April 26, 1912. No. 32376.

Philippines

Philippine Railways. A report of the year ending June 30, 1911. Map and Ills. 3500 w. Far East Rev—Jan., 1912. No. 31011 N.

Problems

The Railroad Problem: Rates, Unit Costs, and Efficiency. F. Lincoln Hutchins. Considers the railroads from the community viewpoint under the divisions of rate making, unit costs and efficiency, capitalization, and regulation. A comparative study. 3000 w. Engineering Magazine—Jan., 1912. No. 29201 B.

The Railroad Problem: Capitalization and Regulation. F. Lincoln Hutchins. Second article of a series. Deductions from unit costs of twenty American railways. 4000 w. Engineering Magazine—Feb., 1912. No. 30020 B.

Need of Reconciliation Between the Railroads and the Public. Edward L. Suffern. Suggests methods of securing public favor and shows its value to the railroads. 3000 w. Engineering Magazine—May, 1912. No. 32345 B.

Railways and Industrial Progress. Maurice H. Robinson. A brief review of present conditions and problems of the railways of the United States. 8000 w. Pro St. Louis Ry Club. March 8, 1912. No. 31928.

Railway Conciliation

The Royal Commission on Railway Conciliation. Gives the national programme as given in the report, with comments. Also editorial. 5500 w. Engr, Lond—Oct. 27, 1911. No. 27975 A.

Railway Congress

International Congress of Railway Engineers in Italy. Lawford H. Fry. Brief account of the meetings. 1800 w. Engng—Nov. 17, 1911. No. 28359 A.

Railway Economics

See same heading, under INDUSTRIAL ECONOMY.

Railway History

Railway Affairs Sixty Years Ago. Reviews affairs in England in 1852. 1500 w. Engr, Lond—Sept. 6, 1912. No. 36006 A.

Railway Securities

Report of the Hadley Securities Commission. Gives the recommendations of this commission, appointed to investigate the question of Federal regulation of the issuance of securities. 4000 w. Ry Age Gaz—Dec. 15, 1911. No. 29008.

Regulation

The Future of Railway Regulation. Charles A. Prouty. Abstract of an interesting address at the annual dinner of the Traffic Club of Pittsburgh. 4000 w. Ry Age Gaz—April 5, 1912. No. 31805.

What Is the Matter with the Railways? F. A. Delano. Address before the Convention of Commercial Assns. of the State of Mich. A criticism of methods of regulation and of labor unionism. 2500 w. Ry Age Gaz—April 19, 1912. No. 32215.

Railway Regulation. Walter L. Ross. Abstract of an address before the Traffic Club of Phila. Discusses some of the problems and the work of the Interstate Commerce Commission. 2500 w. Ry Age Gaz —Feb. 23, 1912. No. 30724.

The Relation of Railroads as Common Carriers to the State and Federal Governments. James C. Davis. Gives a brief summary of the rapid development of railways in America, discussing problems relating to their control. General discussion. 8500 w. Jour W Soc of Engrs—Jan., 1912. No. 30813 D.

Government Ownership of the Railways. Fairfax Harrison. Considers it as unnecessary as it is undesirable. 7600 w. Bul Int Ry Cong—Nov., 1911. No. 28748 G.

Research Work

The University of Illinois and the Railroads. W. F. M. Goss. Explains the research work carried out at the University, and the instruction in railway engineering. Ills. 10500 w. Pro St. Louis Ry Club—Nov. 10, 1911. No. 28741.

Russia

Russian Railway Notes. Illustrated account of present conditions and proposed extensions. 1500 w. Far East Rev—Feb, 1912. No. 31866 N.

Siam

The Royal State Railways of Siam. Information from a recent report on traffic conditions of the different lines for the year ending March 31, 1911. Ills. 1800 w. Far East Rev—Jan., 1912. No. 31009 N.

Snow

Fighting Snow in Kansas. L. C. Lawton. Describes three severe storms which interfered with transportation and the methods for clearing. Ills. 1500 w. Ry Age Gaz—April 19, 1912. No. 32221.

South America

The Railways of South America. R. Renewal. This first article of a series considers the normal gauge railways on the east coast (Uruguay, Paraguay, and a portion of Argentine). 5500 w. Cassier's Mag—Sept., 1912. Serial. 1st Part. No. 36696 B.

Spain

The Spanish Railway System in 1912. Considers briefly the various Spanish railway systems. Ills. 2500 w. Ry Gaz, Lond—Sept. 20, 1912. No. 36488 A.

Statistics

Manual of Railway Statistics. George L. Boag. The present number explains the use of statistics. 2200 w. Ry Gaz, Lond—Jan. 5, 1912. Serial. 1st part. No. 29664 A.

Comparative Railway Statistics of the United States, the United Kingdom, France, and Germany for 1900 and 1909. 47 pages. Bureau of Ry Economics—Bul 24. No. 30181 N.

Statistical Comparison of American and European Railways. Mr. Renaud. 2900 w. Bul Int Ry Cong—Sept., 1912. No. 36277 G.

The Results of Working the Railways in France, in England, and in Germany, during 1910. 2500 w. Bul Int Ry Cong—Sept., 1912. No. 36278 G.

The Railways of the World in the Years 1906-1910 (Die Eisenbahnen der Erde in der Jahren 1906-1910). Statistics giving length by countries, and per cent increase. 5 pp. Glückauf—Aug. 17, 1912. No. 36123 D.

Graphical Presentation of Small Railway Statistics (Graphische Darstellungen der Kleinbahnstatistik). P. Müller. Explains a system for presenting costs, revenues, etc., graphically. Diagrams. 1600 w. Elek Kraft u Bahnen—June 24, 1912. No. 34523 D.

Comparative Railway Statistics. From Bul. No. 24, Bureau Ry. Economics. Presents fundamental statistics showing the railway status, and comparative serviceability, efficiency and financial conditions of the commercial countries. 4500 w. Ry Age Gaz—Dec. 22, 1911. No. 29160.

Switzerland

The Swiss Railway to the Matterhorn. Illustrates and describes the mountainous country through which the Viège-Zermatt steam railway passes; and the Gornergrat electric line. 1200 w. Sci Am Sup—Dec. 30, 1911. No. 29218.

Texas

Texas Commercial Secretaries on the Texas Railway Situation. A reprint of part of the resolutions adopted by the Commercial Societies and Business Men's Assn. of Texas, relating to railways. 3000 w. Ry Age Gaz—Nov. 17, 1911—No. 28075.

Transportation

The Evolution of Transportation. W. N. Mitchell. First of a series of articles reviewing the history, especially the development of the locomotive. 2500 w. Ry & Loc Engng—Oct., 1912. Serial. 1st Part. No. 36447 C.

Effect of Transportation on the Cost of Living. From an address by Finley Asker, before the Atlantic Deeper Waterways Assn. Gives statistics demonstrating that railroad transportation has tended to keep the cost of living down to the minimum. 2200 w. Ry & Engng Rev—Sept. 28, 1912. No. 36412.

Turkey

The Railways of Turkey. Percy F. Martin. Present and projected construction are considered in the present number. Ills. 1200 w. Ry Gaz, Lond—Jan. 5, 1912. Serial. 1st part. No. 29665 A.

United States

Railways and Nationalization in the United States, Apropos of a Work by Mr. E. A. Pratt. W. F. Allen. 4700 w. Bul Int Ry Cong—April, 1912. No. 32356 G.

A Foreign View of American Railways. C. Colson. Excerpts from a Review of Transportation Questions, in *Revue politique et parlementaire*. 2500 w. Ry Age Gaz—Oct. 25, 1912. No. 37001.

Valuation

The Principles Governing a Railroad Appraisal of an Unusual Nature. Gives an outline of the views of George F. Swain on the valuation of the N. Y., N. H., and H. R. R. 6000 w. Eng Rec—Feb 17, 1912. No. 30465.

Railroad Appraisal and Taxation in New Jersey. Charles Hansel. Gives an analysis of the method of determining the taxes to be paid by the railroads, and the method of assessment as compared with the method of appraisal. 4000 w. Eng News—Aug. 22, 1912. No. 35394.

The Organization for and Methods and Results of Physical Valuation in Nebraska. E. C. Hurd. Tabulated items with explanatory notes. 8500 w. Engng & Con—July 31, 1912. No. 35035.

The Physical Valuation Department of the Nebraska State Railway Commission. Deals with the valuation of steam and electric railways, telephone, telegraph, and express companies and other public utilities. 3000 w. Eng News—Aug. 15, 1912. No. 35237.

Valuation of Railways in New Jersey. Explains methods adopted to ascertain value and the results obtained. 4000 w. Ry Age Gaz—Aug. 9, 1912. No. 35101.

STREET AND ELECTRIC RAILWAYS

Accumulator Traction

Accumulator Traction and the Edison Storage Battery, Past, Present and Future. Raymond J. Mitchell. Explains what has been accomplished and the future outlook. 2200 w. Tram & Ry Wld—June 13, 1912. No. 33984 B.

Associations

Electric Railway Associations. A series of articles by the presidents of electric railway associations in America discussing the most important problems confronting the industry during 1912. 18000 w. Elec Ry Jour—Jan. 6, 1912. No. 29442.

Technical Papers at the Cedar Point Meeting. The subjects discussed by various authors include the analysis of interurban traffic with relation to time tables, box frame versus split frame railway motors, publicity, transmission lines, standardization, etc. 6500 w. Elec Ry Jour—June 15, 1912. No. 33749.

Australia

Australasian Tramways. O. W. Brain. Pres. address at the Aust. Tram. Officers' Conference. Discusses the possibility of extending the tramways beyond the commercial limits of the 600-volt trolley wire, describing methods. 4000 w. Aust Min Stand—Nov. 9, 1911. No. 28941 B.

Austria

The Preparatory Work for Electrifying the Imperial Austrian Railway (Bericht über die Vorarbeiten zur Elektrifizierung der k.k. Oesterreichischen Staatsbahnen). A. Hruschka. The work of electrifying the road lying between the Danube and Vienna. Maps. Serial. 1st part. 3000 .w Elek Kraft u Bahnen—Oct. 4, 1911. No. 28430 D.

Electric Railways (Elektrische Bahnen). A general review of the electric railway systems of Austria-Hungary, routes and equipment. Ills., maps and diagrams. 5000 w. Elek Kraft u Bahnen—May 24, 1912. No. 33534 D.

See also Electrification, under Street and Electric Railways.

Berlin

Memoirs Concerning the Introduction of Electric Traction to the Street, Surrounding and Suburban Railways of Berlin (Denkschrift betr. Einrichtung elektrischer Zugförderung auf den Berliner Stadt-, Ring- und Vorortbahnen). Historical review of conditions. Ills. and maps. 5500 w. Elek Kraft u Bahnen—Apr. 4, 1912. 32067 D.

Steam v. Electric Traction in Berlin. Gives views of German manufacturers of steam locomotives in regard to the respective merits of the superheated steam and electric locomotives. 2500 w. Ry Gaz, Lond—Aug. 2, 1912. No. 35193 A.

Boston Elevated Ry.

Power Generation and Distribution System of the Boston Elevated Railway. Gives analysis of local conditions, and reasons for adopting alternating current generation and transmission. Map & Ills. 4000 w. Elec Ry Jour—Dec. 30, 1911. No. 29274.

See also Cars, under Street and Electric Railways.

Brakes

Electro-Magnetic Brakes on the Street Railways of Wiesbaden (Strassenbahnbetriebsmittel mit elektro-magnetischen Schienenbremsen der Stadt Wiesbaden). Herr Berlit. The Wiesbaden plant and the application and operation of these brakes on street railways. Ills. 2500 w. Elek Kraft u Bahnen—Mar. 14, 1912. No. 32064 D.

Tests with Automatic Quick-Acting Vacuum Brakes on the Montreux-Oberland Electric Railway (Versuche mit der automatische Vakuumschnellbremse auf der elektrische Montreux-Oberland-Bahn). R. Zehnder-Spörry. Describes the brake system, and results of extensive tests. Ills. 2500 w. Schweiz Bau—Sept. 14, 1912. No. 36617 D.

The Arrangement of Tramway Brakes. The System of F. van der Straeten (Dispositif de Frein pour Tramways, Système F. van der Straeten). Paul Tart. Describes system based on parallel coupling. Ills. 1200 w. Rev d' Électricité—June, 1912. No. 36175 D.

A New Compensated Testing Brake. David Robertson. Drawings and description of a brake designed by the author. 2000 w. Elect'n, Lond—July 5, 1912. No. 34459 A.

Cable Railways

The Niesen Funicular Railway (Le chemin de fer funiculaire du Niesen). R. Zelinder-Spörry and M. Laplace. Description of this new road in Switzerland.

Ills. Serial. 1st part. 2300 w. Bull Tech d l Suisse Romande—Dec. 25, 1911. No. 29788 D.

The New Varese Funicular of the Varese Electric Construction Company (Le nuove funicolari della Società Varesina per Imprese Elettriche di Varese). A. Sculati. Describes the lines to Campo del Fiori and to Sacro Monte, the equipment of the road, and the power plant. Ills. 6300 w. Ingeg Ferro—Jan. 1, 1912. No. 30640 E.

See also Cableways, under MECHANICAL ENGINEERING, *Transporting and Conveying*.

Carhouse

New Haven Carhouse of the Connecticut Company. Illustrated description of two-story carhouse for double truck cars with grade entrance for each floor. 2500 w. Elec Ry Jour—July 13, 1912. No. 34419.

The New Nicollet Avenue Carhouse of the Twin City Rapid Transit Company. Illustrated description of a modern fireproof carhouse and storage yard. 2500 w. Elec Ry Jour—June 29, 1912. No. 34142.

Carhouse Design and Practice on the Chicago Surface Railways. Detailed description. 4500 w. Elec Ry Jour—Oct. 5, 1912. (Special.) No. 36536 N.

Cranston Carhouse of the Rhode Island Company. A building of mill construction of which only the section with pits is fully inclosed. Ills. 1500 w. Elec Ry Jour—Sept. 28, 1912. No. 36407.

New Fireproof Car Storage House of the Cincinnati Traction Company. Illustrated detailed description of a structure for housing 374 cars. 1200 w. Elec Ry Jour—April 27, 1912. No. 32439.

The New Carhouse and Line Department Building of the Rockford Interurban Railway. Illustrated description of a modern fireproof repair shop building and equipment. 2200 w. Elec Ry Jour—April 6, 1912. No. 31845.

Car Meters

Are We Securing the Best Results from Car Meters? William Clough. Abstract of a paper read before the Swansea Cong. Describes a bonus scheme for rewarding motormen on the savings obtained by using car-meters. 1200 w. Elect'n, Lond—July 5, 1912. No. 34458 A.

Cars

The History of the Double-Deck Car. An illustrated account of the early attempts to utilize the double deck principle on American elecric railways. 1500 w. Elec Ry Jour—Oct 12, 1912. No. 36776.

New Center-Entrance Car in New York. Illustrates and describes a new design in which the car floor is only 10 inches above the head of the rail. Many novel features are introduced in these cars. Also editorial remark. 3500 w. Elec Ry Jour—March 16, 1912. No. 31228.

Novel Departure in Tramcar Design. Illustrated description of the stepless cars being introduced in New York City. 2200 w. Tram & Ry Wld—May 9, 1912. No. 33012 B.

The New York Double-Deck Cars. An illustrated account of the application of the double-deck principle to the design of the stepless car. 2000 w. Elec Ry Jour—Aug. 10, 1912. No. 35126.

New York's Double-Deck Cars. Brief illustrated description. 500 w. Sci Am—Aug. 24, 1912. No. 35413.

Equipment for the New Stepless Car of the New York Railways Company. Illustrates and describes the novel arrangement and the devices installed. 5000 w. Elec Ry Jour—April 20, 1912. No. 32233.

All-Steel Center-Entrance Car for Brooklyn. Plan and description of an experimental car under construction. 1200 w. Elec Ry Jour—March 30, 1912. No. 31685.

The Brooklyn Center Entrance Car. Illustrated description of an all-steel, low-step car for prepayment operation. 3500 w. Elec Ry Jour—June 22, 1912. No. 33911.

Brooklyn Report on the Equipment and Constructional Features of Prepayment Cars. Digest of report on prepayment cars in 13 cities made to the Brooklyn Rapid Transit System. Ills. 12500 w. Elec Ry Jour—Aug. 3, 1912. No. 35014.

The St. Louis Center Entrance Trail Car. Illustrated description. 1000 w. Elec Ry Jour—Aug. 17, 1912. No. 35258.

A New Center-Entrance Car for San Diego. H. M'Nutt. Illustrates and describes the novel features. 1200 w. Elec Ry Jour—Sept. 21, 1912. No. 36230.

The Pittsburgh Double-Door, Double-Deck Car. Illustrated description of a car recently put in service. 3500 w. Elec Ry Jour—Aug. 10, 1912. No. 35125.

The Pittsburgh Low-Floor Car. Illustrated description of the latest center entrance, easy-access car, and the new motor which has made the development possible. 3500 w. Elec Ry Jour—Aug. 3, 1912. No. 35012.

Operating Results of the Pittsburgh Double-Deck Car. Gives the results the preliminary operation. Ills. 1500 w. Elec Ry Jour—Sept. 14, 1912. No. 35969.

The Boston Articulated Car. Illustrated description of how two old single-track cars are flexibly connected to a common central vestibule to secure a large capacity unit for operation over sharp curves. 1800 w. Elec Ry Jour—Oct. 5, 1912. No. 36531.

New Truck Designed by Bay State Street Railway. Illustrated detailed description. 2000 w. Elec Ry Jour—Oct. 5, 1912. No. 36533.

Steel Cars for the Cambridge Subway. Illustrated description of cars of interesting design. 1500 w. Elec Ry Jour—Jan. 13, 1912. No. 29634.

Semi-Steel Cars for the Boston Elevated Railway. Illustrated description. 600 w. Elec Ry Jour—Jan. 6, 1912. No. 29444.

Rolling Stock Standards in Chicago. States requirements and describes types in use. Ills. 5500 w. Elec Ry Jour—Oct. 5, 1912. (Special.) No. 36537 N.

Center-Entrance Car of the Washington Railway & Electric Company. Floor-plans, illustrations and descriptions. 1000 w. Elec Ry Jour—April 27, 1912. No. 32440.

Petrol-Driven Tramway Car. Illustrated description of a car used on a short line in England. 1000 w. Engr, Lond—Jan. 19, 1912. No. 30185 A.

Chicago

Study of Operating Characteristics of Chicago Railways Company's Cars as Influenced by Coasting Time. Data abstracted from the official report of tests made to determine the saving in power consumption and brake-shoes. 4000 w. Elec Ry Jour—Dec. 9, 1911. No. 28727.

Electrical Transmission and Distribution on Chicago Traction Lines. Gives studies of feeder requirements for return circuits, results of tests, etc., as reported by the Board of Supervising Engineers. 2500 w. Elec Ry Jour—June 22, 1912. No. 33912.

Transportation Conditions in Chicago. Maps and outline of the 1907 ordinances, improvements introduced and future development. 3000 w. Elec Ry Jour—Oct. 5, 1912. (Special.) No. 36534 N.

Power Generation for Electric Railways in Chicago. An account of the power situation, the generating and distributing systems and other points of interest. Ills. 6500 w. Elec Ry Jour—Oct. 5, 1912. (Special.) No. 36538 N.

Central Station Power for Electric Railways in Chicago. Henry H. Norris. Discusses why Chicago uses purchased power for its electric railways. 3000 w. Elec Ry Jour—Oct. 5, 1912. No. 36532.

Railway Power Distribution by the Commonwealth Edison Company. Map and explanation of system in Chicago, the construction of the substations, operating features, etc. Ills. 6000 w. Elec Ry Jour—Oct. 5, 1912. (Special.) No. 36539 N.

Construction

Foreign Street Railway Construction. Illustrated review of details of foreign practice. 8000 w. Eng News—May 23, 1912. No. 33065.

Controllers

See Tram Operation, under STREET AND ELECTRIC RAILWAYS.

Costs

Staff Expenses on Electric Railways (Der Personalaufwand elektrischer Bahnen). Artur Ertel. A comparison of staff expenses in privately operated and municipally operated railways in terms of 100,000 car-kilometers. Chart. 4500 w. Elek kraft u Bahnen—Sept. 4, 1912. No. 36653 D.

Curves

A New Special-Work Layout for Street-Railway Track. F. M. Johnson. Gives a design for turnout curves at intersections of tracks, with table for spirals. 700 w. Eng News—Sept. 5, 1912. No. 35542.

A System of Transition Curves for Street Railways. C. W. L. Filkins. Outlines methods and principles, and assumes Holbrook's true transition curve as a basis of a system of transitions. 2500 w. Cornell Civ Engr—Jan., 1912. No. 30037 C.

D. C. System

The 1500 Volt D. C. Railway System of Piedmont and Northern Lines. M. C. Turpin. Illustrated description of equipment used on the longest high voltage direct-current road in the United States. 1800 w. So Elect'n—Sept., 1912. No. 35823.

Development

A Concise Statement of the Development of Electric Railroads. S. W. Huff. An address giving incidents from the writer's experience in this field. 8000 w. Sib Jour of Engng—Oct., 1912. No. 37031 C.

Egypt

The Electric Tramway from Cairo to Heliopolis (Die elektrische Strassenbahn von Cairo nach der Oase Heliopolis). A description of the route traversed and the system used. Maps. Serial. 1st part. 1600 w. Elektrotech. Rund—Oct. 12, 1911. No. 28433 D.

Electric Apparatus

Development in Electric Railway Apparatus During the Past Year. Illustrates and describes machines and improvements introduced. 1000 w. Mach (Ry Ed.)—Jan., 1912. No. 29484 C.

Electric Railways

Edison's Pioneer Electric Railway Work. T. Comerford Martin. Illustrated review of Edison's work in this field. 2000 w. Sci Am—Nov. 18, 1911. No. 28064.

Europe

Some Impressions of the Electric Traction Situation in Europe. C. E. Eveleth. Explains differences in requirements in Europe and America, and reviews impressions in different countries. 4000 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33250 F.

Feeders

Feeder Calculations for Return Currents in Electric Railway Systems (Note sur le calcul des feeders de retour du courant dans un réseau de tramways électriques). M. Popliment. Mathematical discussion on line design. Ills. 3800 w. All Industrielle—June, 1912. No. 34000 D.

France

The Electric Railway from Villefranche to Bourg-Madame (Le Chemin de Fer Électrique de Villefranche à Bourg-Madame). Description of details in line construction, and the hydro-electric plant. Ills and plates. Serial. 1st part. 5500 w. Génie Civil—May 4, 1912. No. 32779 D.

Franchises

How the Chicago and Cleveland Street Railway Settlements are Working Out. Delos F. Wilcox. Read before the Nat. Munic. League, Los Angeles, Calif. A critical review of these two franchise settlements. 4500 w. Eng News—Sept. 19, 1912. No. 36094.

Germany

Germany's Elevated and Underground Railways (Deutschlands Hoch- und Untergrundbahnen). Fritz Steiner. A review of these systems in Germany. Ills. and maps. Serial. 1st part. 3700 w. Zeit d Oest Ing u Arch Ver—May 3, 1912. No. 33563 D.

The Hamburg Elevated Railway (Die Hamburger Hochbahn). W. Stein. An outline of the overhead structures, bridge and underground constructions of the line, and the power plant. Ills. 7500 w. Zeit d Oest Ing u Arch Ver—June 14, 1912. No. 34546 D.

The Service Plant of the Hamburg Elevated Railway (Die Betriebseinrichtung der Hamburger Hochbahn). W. Mattersdorf. Description of rolling stock, power stations and lines of this system. Ills. 6600 w. Elek Kraft u Bahnen—June 4, 1912. No. 34519 D.

Construction of the Hamburg Elevated Railway (Der Bau der Hamburger Hochbahn). W. Stein. Plan of route, and details of overhead and subway construction. Ills. Serial. 1st part. 2500 w. Glaser's Ann—Oct. 1, 1912. No. 37419 D.

The Electric Suburban Roads from Bonn to Siegburg and Bonn to Konigswinter (Die elektrischen Vorortbahnen Bonn-Siegburg und Bonn-Konigswinter). Herr Brugsch. Describes construction of the lines, rolling stock, and plant equipment. Ills. Serial. 1st Part. 5300 w. Elek Kraft u Bahnen—Sept. 24, 1912. No. 36658 D.

Electric Traction on Prussian Railways (Elektrische Zugförderung auf preussischen Staatseisenbahnen). Brecht. Description of the generating stations and high transmission lines. Ills. Serial. 1st part. 5000 w. Zeitschr d Ver Deutscher Ing—Nov. 18, 1911. No. 28814 D.

Holland

Statistics of Electric Tram Operation in Holland for the Year 1910 (Statistiek van Electrische Tramondernemingen in Nederland voor 1910). Giving routes, mileage, passengers carried, costs, etc., for the year. 4 pages. Ingenieur—Jan. 13, 1912. No. 30591 D.

See also same heading, under RAILWAY ENGINEERING, *Miscellany*.

Illinois

Physical and Operating Features of the East St. Louis & Suburban Railway. Map and illustrated description of one of the largest properties in Illinois operating a combined city and interurban service. 6500 w. Elec Ry Jour—Sept. 7, 1912. No. 35830.

Interurban

The Operation of Limited Trains on Short Interurban Lines. P. P. Crafts. Read at Iowa Convention. Suggestions for service on interurban lines, giving results obtained. 2000 w. Elec Ry Jour—May 4, 1912. No. 32636.

Alternating and Direct-Current Interurban Lines of the Milwaukee System. O. M. Rau and H. A. Mullett. Presents comparative construction data and car energy consumption figures for lines formerly operated by a. c. and now by d. c. 3000 w. Elec Ry Jour—Dec. 2, 1911. No. 28619.

Electric Interurban Lines Serving the City of Chicago. An account of the seven interurban electric lines. Map. 7000 w. Elec Ry Jour—Oct. 5, 1912. (Special.) No. 36542 N.

Joliet Extension of the Chicago, Ottawa & Peoria Railway. Illustrates and describes construction details and gives costs. 3000 w. Elec Ry Jour—Dec. 30, 1911. No. 29278.

High-Speed Service Between Allentown and Philadelphia. Illustrates and describes improvements in track signals and cars. 2500 w. Elec Ry Jour—Nov. 2, 1912. No. 37261.

The Waterloo, Cedar Falls & Northern Railway, Waterloo, Iowa. Illustrated detailed description of this property. 3000 w. Elec Ry Jour—Aug. 24, 1912. No. 35429.

Goods and Parcels Service of the Nice and District Tramways. Illustrates and describes this service on tramways extending along the Mediterranean Sea east and west of Nice, France. 3000 w. Tram & Ry Wld—Jan. 11, 1912. No. 29990 B.

Italy

The Electrification of the "Giori" Line (Note sur l'Électrification de la Ligne Giori). Pietro Verole. Description of the line from Genoa across the Apennines, partially by tunnel, connecting with Milan and Turin, profiles of the grades, and the electrical equipment. Ills., diagrams and maps. 10000 w. Rev Gen des Chemins de Fer—Feb., 1912. No. 31399 G.

The Naples "Metropolitan" (La Metropolitana di Napoli). Umberto Cassitto. General description of the Naples Metropolitan Electric Ry. Its present and proposed lines. Ills. and Plates. 3800 w. Ingegneria Ferroriaria—Feb. 15. 1912. No. 31423 E.

The Stresa-Mottarone Electric Railway (La Ferrovia Elettrica Stresa-Mottarone). Details of construction. 2800 w. Ills. Industria—Oct. 8, 1911. No. 28475 D.

Notes on the Development of Electric Traction in Italy (Einiges über die Entwicklung des elektrischen Bahnwesens in Italien). Herr Weinberger. Review of recent achievements. 5000 w. Elek Kraft u Bahnen—Sept. 24, 1912. No. 36657 D.

The High-Voltage Monoplane Electric Railway, Rome - Frosinone - Diramazione (La Ferrovia elettrica a corrente monofase ad alta tensione Roma-Frosinone-Diramazione). Jean Pellizzi. Details in the electrical equipment of this road. Ills. and maps. 5200 w. Ingeg Ferro—Mar. 31, 1912. No. 31314 E.

Ithaca

Report on Ithaca (N. Y.) Street Railway. Abstract of results of an investigation made by C. R. Barnes. Compares with other cities of similar size in the State. 4500 w. Elec Ry Jour—April 20, 1912. No. 32234.

Locomotives

The Single-Phase Locomotive with Continuous-Current Rectifiers. A. Soulier. Abstract translation from *L'Indus. Elec.* Describes a rotary rectifier, placed on a locomotive, for converting single-phase continuous-current. 1200 w. Elect'n, Lond—March 1, 1912. No. 31136 A.

Electric Locomotives Having the Anvert-Ferrand A. C. Rectifier (Locomotive électrique a redresseur-régulateur alternatif-continu de M. M. Auvert et Ferrand). A. Bidault des Chaumes. Description of this system as applied to electric locomotives. Ills. and Plate. 6000 w. Génie Civil—Feb. 17, 1912. No. 31406 D.

The Electric Locomotive. C. E. Barry. Explains the advantages claimed for electric locomotives, and reviews briefly the four distinct systems of power distribution employed in the United States, and their bearing on locomotive design. Ills. 2500 w. Sib Jour of Engng—May, 1912. No. 33203 C.

The Highest Voltage Direct Current Locomotive Ever Built in the United States. Illustrated description of a 1500-volt d. c. locomotive for the Piedmont Traction Co. 700 w. Ry & Loc Engng—June, 1912. No. 33402 C.

The Couple-Drive for Electric Locomotives with Superimposed Motors, by Bauart, Brown, Boveri & Co. (Kuppelstangen-Antrieb nach Bauart, Brown, Boveri & Cie. für elektrische Lokomotiven mit hochgelagerten Antriebsmotoren). J. Buchli. Describes the triangular system for the coupler rod under this construction. Ills. Serial. 1st part. 3500 w. Schweiz Bau—July 13, 1912. No. 35526 D.

Classification and Arrangement of Electrical Driving Mediums (Einteilung und Bezeichnung der elektrischen Triebfahrzeuge). Artur Hruschka. Discusses modern arrangements of the various driving parts of electric locomotives. 4400 w. Elek Kraft u Bahnen—Sept. 14, 1912. No. 36655 D.

Electric Locomotives for Interurban Freight Haulage. F. E. Wynne. Abstract of paper read before the Cent. Elec. Ry. Assn. Outlines a method for quick approximate selection of a locomotive for a given service. 1500 w. Elec Ry Jour—Nov. 25, 1911. No. 28311.

British Columbia Electric Locomotives. Illustrated detailed description of locomotive for service in Vancouver. 1000 w. Elec Ry Jour—Jan. 6, 1912. No. 29443.

British Electric Locomotives for Canada. Illustration and brief description of one of three 50-ton electric locomotives for the British Columbia Elec. Ry. Co. 350 w. Ry Gaz, Lond—March 8, 1912. No. 31251 A.

A New Electric Locomotive Design. Illustrated description of a new type built for the N. Y., N. H. and H. R. R. 1200 w. Eng News—March 14, 1912. No. 31184.

Eight-Motor Articulated Electric Locomotive. Illustrates and describes new engines for the N. Y., N. H., & H. R. R. 1800 w. Ry Age Gaz—June 28, 1912. No. 34125.

Articulated Electric Locomotives with Eight Motors. Illustrated description of electric locomotives for the N. Y., N. H. & H. R. R. 1000 w. Am Engr—July, 1912. No. 34264 C.

Electric Locomotives, N. Y., N. H., & H. R. R. Information concerning the three types tested, with illustrated description of new locomotives. 1500 w. Ry & Loc Engng—Aug., 1912. No. 34964 C.

Three German Electric Locomotives. Arranged from articles by Werner Usbeck in the *Alleg. Elek. Gesell. Jour.* Illustrated descriptions, with report of service. 2200 w. Eng News—Nov. 9, 1911. No. 27754.

Lötschberg Electric Locomotive No. 121. Illustrates and describes the most notable locomotive in use at present on the portion of this line which is open for traffic. 2500 w. Engr, Lond—Feb. 2, 1912. Serial. 1st part. No. 30408 A.

Electric Locomotives for the Loetschberg Tunnel. Illustrated general description of the locomotives, one of which was built by the Allgemeine Elektrizitats Gesellschaft, and the other by the Oerliken Works. 2000 w. Ry & Engng Rev—April 27, 1912. No. 32452.

Single-Phase Locomotives for the Prussian State Railways. Illustrated description of the electric locomotives for the Dessau-Bitterfeld Ry. and their operation. 3000 w. Engr, Lond—April 26, 1912. No. 32851 A.

Types of Electric Locomotives on Prussian State Railways. Gives the main data of the electric locomotives ordered. 2000 w. Ry Gaz, Lond—Oct. 4, 1912. No. 36834 A.

Electric Locomotives of the Prussian-Hessian State Railways. Illustrates and describes three locomotives with novel types of drive, for the Dessau-Bitterfeld line. 1800 w. Elec Ry Jour—Nov. 11, 1911. No. 27991.

The New Oerlikon Single-Phase Locomotives. Dr. H. Behn-Eschenburg. Illustrates and describes the main features of the new 2500 h.p. locomotive. 1200 w. Elect'n, Lond—June 28, 1912. No. 34312 A.

Thirty-Ton Electric Locomotive for the Frederick Railroad, Frederick, Maryland. Illustrated description. 800 w. Mach (Ry Ed)—May, 1912. No. 32640 C.

Boston & Maine Electric Locomotives. Brief illustrated description of locomotives for service in the Hoosac Tunnel. 900 w. Mach (Ry Ed)—Nov., 1911. No. 27749 C.

See also Mine Locomotives, under MINING AND METALLURGY, *Mining*.

Locomotive Tests

Freight Train Tests on an Electric Interurban Railway. S. T. Dodd. Discusses a series of tests made upon electric locomotives pulling freight trains on the Fort Dodge, Des Moines & So. Ry., and a tabulation of results. Ills. 3500 w. Pro Am Inst of Elec Engrs—May, 1912. No. 33252 F.

London

Passenger Transport in London: The Comparative Economy of the Electric Railway and the Motor Omnibus. Editorial discussion of street traffic conditions in London. 2500 w. Eng News—Oct. 31, 1912. No. 37210.

Electrification of London Railways. Map and description of the great London and North Western scheme. 3000 w. Tram & Ry Wld—Dec. 7, 1911. No. 29126 B.

Continuous Service Passenger Transportation in Relation to the London Traffic Problem. William Yorath Lewis. Discusses traffic problems in large cities, especially considering the Adkins-Lewis system. Appendix and discussion. 16000 w. Jour Soc of Arts—Dec. 15, 1911. No. 28924 A.

The Extension of the Central London Railway to Liverpool Street. An account of a recently opened extension, providing direct connection with the terminus of the Great Eastern Ry. 2500 w. Elect'n, Lond—July 26, 1912. No. 35146 A.

The Central London Railway Extension. Illustrated description of the recently opened line from the Bank to Liverpool St. 3000 w. Tram & Ry Wld—Aug. 8, 1912. No. 35464 B.

Suburban Travel Facilities in London. Editorial review of the development in progress. 2000 w. Engng—Sept. 6, 1912. No. 36000 A.

Los Angeles

Transportation Problem of Los Angeles. Report rendered by Bion J. Arnold giving recommendations. Maps. 3500 w. Elec Ry Jour—Nov. 18, 1911. No. 28149.

Maintenance

The Maintenance of Electric Railway Equipment. J. L. Crouse. From a paper read before the Cent. Elec. Ry. Assn. Discusses methods of correcting delays in service and reducing maintenance. 2200 w. Elec Jour—April, 1912. No. 32184.

Efficiency in Equipment Maintenance. J. C. Thirlwall. Shows how car maintenance efficiency of a large railway system has been improved by concentration and the adoption of the mileage system. 4500 w. Elec Ry Jour—Sept. 7, 1912. No. 35831.

See also Organization, under INDUSTRIAL ECONOMY.

Management

Tramway Administration by Municipalities: A Retrospect and a Forecast. Councillor S. C. T. Neumann. Read before the Munic. Tram. Assn. Also general discussion. 12000 w. Tram & Ry Wld—Oct. 10, 1912. No. 37064 B.

Monorail

Nutation and the Monorail Car. Burt L. Newkirk. A study of nutational vibration, developing formulae which describe the motion, and illustrating their application by examples. 2500 w. Jour Fr Inst—Sept., 1912. No. 36304 D.

Foucault and Eddy Currents Put to Service. An illustrated account of the investigations of Emile Bachelet, and the model traffic line at Mount Vernon, N. Y. 1500 w. Engr, Lond—Oct. 18, 1912. No. 37076 A.

Motive Power

The Supply and Transmission of Power Self-Contained Road Vehicles and Locomotives. J. C. Macfarlane and H. Burge. Discusses battery-propelled vehicles, patrol-electric vehicles and oil engine electric system for suburban railways. 9000 w. Inst of Elec Engrs—Feb. 22, 1912. No. 31016 A.

New York, Westchester and Boston

The New York, Westchester & Boston. Gilbert G. Browne. Map and illustrated description of the construction of this new high speed electric line running north from New York City. Also editorial. 3500 w. Ry Age Gaz—June 7, 1912. No. 33495.

Track and Stations of the New York, Westchester & Boston Railway. Illustrated description of the permanent way and structures on this new suburban railway. 2500 w. Elec Ry Jour—June 8, 1912. No. 33627.

Energy Distribution on the New York, Westchester & Boston Railway. Illustrated description of the overhead line construction on this single-phase suburban railway. 3500 w. Elec Ry Jour—June 15, 1912. No. 33748.

Operation

Observations on the Influence of Plant and Operation upon the Productiveness of Electric Street Railways (Betrachtungen über den Einfluss der Anlage- und Betriebsbedingungen auf die Rentabilität elektrischer Stadtsschnellbahnen). Franz Musil. In part one, the railway systems in six of the largest cities of the world are compared. Maps. 3500 w. Zeit d Oest Ing u Arch Ver—July 26, 1912. No. 35533 D.

Paris

Mechanical and Electric Traction on the Paris Streets. Jacques Boyer. Illustrates and describes the track construction, vehicles, and station equipment, and the alumino-thermic process of welding. 5000 w. Engineering Magazine —Oct., 1912. No. 36291 B.

Development of Transport in Paris. Editorial review of changes in passenger traffic. 4000 w. Engng—March 1, 1912. No. 31148 A.

Pay-As-You-Enter

Pay-As-You-Enter Cars at Galeshead. Illustrated account of the first application of this system in Europe and its reception. 1500 w. Tram & Ry Wld—July 11, 1912. No. 34599 B.

Pay-As-You-Enter and Its Advantages to the Tramway Companies and the Travelling Public. H. M. Howard. Abstract of a paper read before the Swansea Cong. Advantages are discussed and the application under British conditions is considered. 2500 w. Elect'n, Lond—July 5, 1912. No. 34461 A.

See also Cars, under STREET AND ELECTRIC RAILWAYS.

Power Distribution

Report of the Committee on Power Distribution. Abstract of report read before the American Electric Railway Engineering Association. 10000 w. Elec Ry Jour —Oct. 8, 1912. No. 36713.

Power Economy

Investigation of Conditions for the Lowest Power Consumption in Railway Operation (Untersuchung der Bedingungen für den geringsten Arbeitsverbrauch beim Bahnbetrieb). Julius Fekl. Mathematical determinations, considering all things which are users of power. Serial. 1st part. 4600 w. Elek u Masch—June 23, 1912. No. 34516 D.

Power Stations

Missouri River Power Station. A. R. Maujer. Illustrated detailed description of the station at Kansas City, Mo. 2500 w. Power—Sept. 3, 1912. No. 35711.

Power Station of the Waterloo, Cedar Falls & Northern Railway. Illustrated description of the modernization of a steam plant by the installation of horizontal turbines. 2000 w. Elec Ry Jour—Aug. 31, 1912. No. 35708.

Station of San Diego Electric Ry. Co. Leroy W. Allison. Illustrated description of a 4200 Kw. plant employing a high-pressure reciprocating engine and low-pressure turbines. 2500 w. Power—Aug. 13, 1912. No. 35136.

Georgetown Power Station of the Capital Traction Company. Illustrated description of this plant on the Potomac River. 2500 w. Elec Ry Jour—May 4, 1912. No. 32635.

See also same heading, under ELECTRICAL ENGINEERING, *Generating Stations.*

Progress

Critical Comparisons on the Use and Growth of Street Railways (Ein Kritischer Vergleich über Benutzung und Ausbreitung von strassenbahnen). Ph. Scholtes. Comparison of traffic, etc., in several German cities. Diagrams. Serial. 1st part. 1200 w. Elek Kraft u Bahnen—Jan. 14, 1912. No. 30583 D.

Rail Corrugation

Report of the Commission on the Determination of Rail Corrugation (Rapport der Commissie van onderzoek betreffende de golfvormige afslijting der rails). The amount of corrugation determined by pointers attached to the car wheels. Ills. 3000 w. De Ingenieur—Feb. 24, 1912. No. 31381 D.

Report on Rail Corrugation. Arthur Busse. Abstract of a report to Int. St. & Interurban Ry. Assn., Norway. Believes the cause to be the method of rail manufacture. 3500 w. Elec Ry Jour—Aug. 10, 1912. No. 35127.

Report on Rail Corrugation. Arthur Busse. Abstract of a report to the International Street & Interurban Ry. Association. Concludes that the primitive cause of corrugation is the method of rolling. 3500 w. Can Engr—Aug. 29, 1912. No. 35719.

The Report on Rail Corrugation. A discussion on the interim report of Corrugation Committee of the Munic. Tram. Assn. 9000 w. Tram & Ry Wld—Oct. 10, 1912. No. 37065 B.

Corrugation of Rails. J. H. Briggs. Describes experiments made to ascertain whether the friction which results from the forced skid of a leading outer wheel could also bring about a periodic action. 3000 w. Elect'n, Lond—April 26, 1912. Serial. 1st part. No. 32832 A.

Causes of Rail Corrugation. Charles K. Mohler. Illustrated discussion of the Causes, concluding that they are due to the side slip of wheels in combination with longitudinal slips. Also editorial. 5000 w. Eng News—Nov. 30, 1911. No. 28534.

The Corrugation of Rails. Prof. A. Schwartz and R. G. Cunliffe. Describes laboratory experiments and investigations on actual tracks. Ills. 4500 w. Elect'n, Lond—April 5, 1912. No. 31984 A.

See also Tracks, under STREET AND ELECTRIC RAILWAYS.

Railless

The Electric Trolley Omnibus System and Railless Traction. Horace M. Boot. Read before the Inst. of Munic. Engrs., London. Explains the advantages and describes the system. Ills. 1800 w. Surveyor—Dec. 22, 1911. Serial. 1st part. No. 29461 A.

The Trolley Vehicle System of Railless Traction. Henry C. Adams. Describes the various methods of applying this system, and improvements introduced in England. Ills. 10500 w. Soc of Engrs—March 4, 1912. No. 31280 N.

Railless Traction at Leeds and Bradford. Information concerning trolley omnibuses that have been in service nine months and the future prospects. Ills. 2500 w. Elec Rev, Lond—March 29, 1912. No. 31876 A.

Railless Trolley Traction in Dundee. Illustrated description of the third line opened in the United Kingdom. 1000 w. Tram & Ry Wld—Oct. 10, 1912. No. 37063 B.

A Review of Railless Electric Traction in England. R. E. Neale. Ills. 2000 w. So Elect'n—June, 1912. No. 33404.

Municipal Railless Traction in Steglitz (Die "Gleislose Bahn" der Gemeinde Berlin-Steglitz). W. A. Th. Müller. Brief description of the system in steglitz. Ills. 2000 w. Motorwagen—June 30, 1912. No. 35544 D.

Railless Railways ("Gleislose Bahnen"). A compendium. The "Elektro-Daimler-Stoll" System described by E. Moor; the Lloyd-Köhler, by H. Hinderer, and a description of the Schiemann system. Ills. 4500 w. Zeit d Mitt Motorwagen Ver—Mar. 5, 1912. No. 32061 D.

Rail Resistances

Experimental Studies on the Resistance of Steel Rails to Alternating Currents (Étude expérimentale sur la Résistance des Rails d'Acier, en Courant alternatif). M. C. Villiers. Advances theories from experiments. Discussed by M. Boucherot. 5500 w. Bul Soc Int d'Électriciens—Dec., 1911. No. 30599 F.

Railway Apparatus

Development in Railway Apparatus During the Past Year. Remarks on improved devices for electric railways. 1000 w. Ry & Loc Engng—Jan., 1912. No. 29343 C.

Railway Franchise

Suggestions for a Model Street Railway Franchise. J. W. S. Peters and Delos F. Wilcox. Extracts from a committee report presented at Richmond, Va. 2000 w. Eng News—Dec. 7, 1911. No. 28646.

Railway Motors

Construction of a Modern Railway Motor. The essential parts are considered in detail. Ills. 1500 w. Ry & Loc Engng —Jan., 1912. No. 29344 C.

Railway Plans

City Extension in Relation to the Planning of Street Railway Systems. Information from a paper by Mr. Wattman read before the Int. Union of Trann. and Light Rys. Considers arrangement of tracks in streets, stopping places, etc. Ills. 3000 w. Eng News—Aug. 1, 1912. No. 35044.

Rapid Transit

A Report on an Underground Rapid Transit System for Chicago. Information from a recently issued report concerning subways proposed by the Commission and the general designs. Map. 1500 w. Eng News—Nov. 16, 1911. No. 28087.

Projected Railways for Berlin (Verein für Eisenbahnkunde zu Berlin). A series of articles agitating the subject of rapid transit. The second deals with electric traffic in cities in the United States (*Die elektrischen Stadtschmellbahnen in den Vereinigten Staaten.*) Messrs. Zehme. Ills. Serial 2nd part. 2500 w. Glaser's Ann —Nov. 1, 1911. No. 28836 D.

Rates

Copper Zone vs. Nickel Zone as a Basis of Interurban Rates. George Eberle. Suggests the abolition of the 5-cent zone system and the establishment of a tariff based on small zones with a minimum fare. 6000 w. Elec Ry Jour—Sept. 21, 1912. No. 36231.

Street Railway Rates in European and American Cities (Die Fahrpreise der Stadtschnellbahnen in den europäischen und amerikanischen Grossstädten). D. G. Kemmann. General discussion on the rate question, and comparative figures. Serial. 1st part. 5000 w. Elek Kraft u Bahnen —May 14, 1912. No. 33532 D.

Rectifier

An Electric Locomotive with the Auvert Ferrand Rectifier. Description translated from *Le Génie Civil.* Claims flexibility of control and working, and high efficiency. 1200 w. Elec Rev, Lond—May 24, 1912. No. 33446 A.

Re-equipment

Re-equipment of the Fort Dodge, Des Moines & Southern for 1,200-Volt Operation. This steam road was equipped in 1906 for handling passengers by 600-volt trolley. It has recently been re-equipped for handling both freight and passengers by 1,200-volt trolley. Ills. 4500 w. Elec Ry Jour—May 18, 1912. No. 32950.

Repairs

Tools for Electric Railway Repairs. C. A. Tupper. Outlines the scope of repair work and illustrates and describes some required tools. 2000 w. Am Mach—May 16, 1912. No. 32867.

Rolling Stock

B. J. Arnold's Report on Rolling Stock for San Francisco. A discussion of car design. 2500 w. Elec Ry Jour—Sept. 14, 1912. No. 35967.

Safety Device

An Automatic Bumper for Drawbridges. Illustrated description of a device installed on the Charles River bridge, at Boston. 400 w. Elec Ry Jour—Sept. 21, 1912. No. 36232.

Self-Propelled Cars

Foreign Convention Report on Self-Propelled Cars. Gives data on the operation of gas electric narrow-gage and storage battery standard-gage cars. 2500 w. Elec Ry Jour—Aug. 24, 1912. No. 35431.

Service Methods

Efficiency in Handling Equipment in Brooklyn. Describes methods used to secure maximum service and economical use of cars. 2500 w. Elec Ry Jour—Dec. 23, 1911. No. 28909.

Shop Practice

Cincinnati Traction Company Shop Practice. Illustrates and describes equipment and methods employed in these shops. 3000 w. Elec Ry Jour—Aug. 17, 1912. No. 35255.

Shop Notes from Hartford, Conn. A report of effective car maintenance and labor-saving methods. Ills. 3500 w. Elec Ry Jour—April 6, 1912. No. 31840.

Shops

Main Shops of the Stuttgart Street Railways (Hauptwerkstätte der Stuttgärter Strassenbahnen in Stuttgart). P. Loercher. Description of yard, plant layout, and equipment. Ills. 2200 w. Elek Kraft u Bahnen—June 24, 1912. No. 34524 D.

Power in Electric Street Railway Shops (Werkstattsbetrieb für elektrische Strassenbahnen). H. Schörling. Reviews the repair-shop equipment of the Hannover street railway system. Ills. 2700 w. Elek Kraft u Bahnen—June 24, 1912. No. 84525 D.

Electrical Practices of the Third Avenue Railway, New York. Gives data on motor maintenance costs and illustrated descriptions of various tools for electrical work. 1800 w. Elec Ry Jour—Sept. 14, 1912. No. 35966.

New Shops and Carhouses of the Boston Elevated Railway in Cambridge, Mass. Illustrated description of a large storage carhouse, shop and yard, and an operating carhouse. 1500 w. Elec Ry Jour—March 23, 1912. No. 31511.

Repair Shop Layouts. A compilation of figures from ten shops, most of them recently constructed. Ils. 3000 w. Elec Ry Jour—April 6, 1912. No. 31841.

The Illinois Traction System's New Brass Foundry and General Shop Notes. Illustrated description of new foundry equipment, methods of manufacture and costs of bearings and hardware. 2500 w. Elec Ry Jour—April 6, 1912. No. 31843.

Car Shops for an Electric Railway. Illustrated description of shops at Milwaukee, Wis., as an example of good modern practice. 2500 w. Eng News—Aug. 29, 1912. No. 35646.

Simplon

The Electric Traction of the Simplon (La Traction Électrique au Simplon). A statement of the electrical equipment for the Simplon tunnel. Ills. 5500 w. Alliance Industrielle — Feb., 1912. No. 31417 D.

Single Phase

Overhead Single-Phase Railway Equipments on the Chemins de Fer du Midi. Describes in detail two of the six forms of equipment on trial by this railway. Ills. 1500 w. Engng—Dec. 29, 1911. No. 29617 A.

The Different Methods of Connecting Three-Phase Armature Windings for Single-Phase Service. W. J. Foster. Brief explanation with diagrams. 1200 w. Gen Elec Rev—July, 1912. No. 34231 C.

Single-Phase Railway Motors. Gives a description of a Bergmann single-phase motor and its application to railway working. Ills. 1500 w. Elect'n, Lond—July 19, 1912. No. 34884 A.

Single-Phase Railways. Illustrated description of the overhead equipment of the Dessau-Bitterfeld Ry. is given in the present number. 2500 w. Engr, Lond—May 3, 1912. Serial. 1st part. No. 32886 A.

The New York, Westchester & Boston Railway. Map and illustrated account of the franchise history of this new single-phase suburban railway, the territory it serves, relation to established lines, the service it gives, etc. 3500 w. Elec Ry Jour—May 25, 1912. No. 33146.

Questions of Design in Connection with Single-Phase Traction. Dr. W. Kummer. Abstract from *Elek. Zeit.* Discusses points to be considered by the designer. 1200 w. Elect'n, Lond—Aug. 23, 1912. No. 35744 A.

St. Polten-Mariazell Single-Phase Line of the Austrian State Railways. Illustrated description of a 25-cycle mountain line operated with geared side-rod locomotives. 2500 w. Elec Ry Jour—Aug. 3, 1912. No. 35013.

Snow Removal

Winter Troubles on Electric Railways. Charles J. Jones. Abstract of a paper read before the Illinois Elec. Ry. Assn. Discusses snow fences. and snow plows, and the organization required for fighting snow. 1800 w. Eng News—Oct. 10, 1912. No. 36755.

Stations

The Interurban Terminal Station of the Ohio Electric Railway at Columbus, Ohio. Illustrated description of a fireproof passenger station and office building. 1200 w. Elec Ry Jour—April 13, 1912. No. 31969.

Storage Batteries

Three Car Storage Battery Train. Illustrated description of the first storage battery train ever operated, and of general progress in storage battery traction. 2200 w. Elec Ry Jour—Sept. 28, 1912. No. 36410.

Subways

New York's First Subway. Waldemar Kaempffert. Illustrated description of the pneumatic railway built in 1869 by Alfred E. Beach, beneath Broadway, near Warren St. 1800 w. Sci Am—Feb. 24, 1912. No. 30739.

Use of Concrete in the Fourth Avenue Subway of the New York Underground Rapid Transit Railway System. From a paper by Frederick E. Noble, read before the Nat. Assn. of Cement Users. Illustrates and describes interesting features of work in Brooklyn. 2500 w. Engng & Con—May 1, 1912. No. 32557.

Constructing the Lexington Avenue Subway. Methods of excavating, timbering and underpinning. Ills. 1800 w. Eng Rec—May 4, 1912. No. 32587.

New York City Subway Planning. Information concerning the proposed new rapid transit lines, the terms of construction and operating contracts. Map. 4000 w. Eng News—May 30, 1912. No. 33826.

Subway Equipment Improvements. Illustrated description of methods and devices which increased the capacity of the N. Y. system from 400,000 to 1,000,000 passengers per day. 6000 w. Eng News—Feb. 29, 1912. No. 30939.

The Sixth Avenue Subway of the Hudson and Manhattan Railroad. H. G. Burrows. Map and illustrated description of the portions of the line between 12th and 33d Streets, New York City. 14000 w. Pro Am Soc of Civ Engrs—Aug., 1912. No. 35623 F.

Section 3, Lexington Avenue Subway, New York. Detailed description of methods of covered trench construction, using curb shafts. 3000 w. Eng Rec—Aug. 3, 1912. No. 35017.

Construction Methods and Distribution of Costs in Constructing the Sixth Ave. Subway of the Hudson & Manhattan R. R., New York City. Describes the general methods, reinforcement, concreting, waterprofing, etc. Ills. 5000 w. Engng & Con—Sept. 11, 1912. No. 35909.

Progress of the Lexington Avenue Subway. Illustrated description of construction work on sections 6, 8, 10 and 11. Street supported on steel girders over excavation. 3500 w. Eng Rec—Aug. 31, 1912. Serial. 1st part. No. 35657.

Tunneling in Sand for a Subway Crossing under a Subway. Plan, sections and description of Fourth avenue subway crossing under Atlantic avenue station of Interborough Subway, Flatbush avenue, Brooklyn, N. Y. 2500 w. Eng News—Jan. 18, 1912. No. 29838.

A Subway Tube as a Temporary Storm Water Sewer. Illustrates and describes a scheme in connection with subway construction in Brooklyn, made necessary by the reconstruction of the sewerage system. 2200 w. Eng Rec—Nov. 4, 1911. No. 27715.

The Cambridge Subway. L. E. Moore. Map and outline of the transit situation as it now exists in Boston, and illustrated detailed description of the location and design of this new subway, its construction, and related subjects. 6500 w. Eng News—Feb. 1, 1912. No. 30232.

Cambridge Extension of the Boston Subway. Illustrates and describes details of this work. 2000 w. Ry & Engng Rev—April 27, 1912. No. 32451.

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